THESIS

DESIGN AND IMPLEMENTATION OF A PERSONNEL DATABASE SYSTEM FOR INDONESIAN NAVAL OFFICERS

by

Djoko M. Ariyadi

June 1986

Thesis Advisor: Daniel R. Dolk

Approved for public release; distribution is unlimited.
**Title:** Design and Implementation of a Personnel Database System for Indonesian Naval Officers

**Abstract:**

The objective of this thesis is to provide a software tool to support the Deputy Chief of Staff for Personnel and Staff Function of the Indonesian Navy in making decisions with fast, timely, relevant, up-to-date and accurate information regarding Personnel Management activities. A database design is proposed including the logical and physical phases and an implementation of a personnel database prototype is undertaken on a microcomputer using dBASE II.
Design and Implementation of a Personnel Database System
for Indonesian Naval Officers
by
Djoko M. Ariyadi
Major, Indonesian Marines
B.S., Indonesian Naval Academy, 1969
Submitted in partial fulfillment of the requirements for the degree of
MASTER OF SCIENCE IN INFORMATION SYSTEMS
from the
NAVAL POSTGRADUATE SCHOOL
June 1986

Author: ________________________________
Djoko Murti Ariyadi

Approved by: ________________________________
Daniel R. Dolk, Thesis Advisor

Richard A. McGonigal, Second Reader

Willis R. Greer, Jr., Chairman,
Department of Administrative Sciences

Kneale T. Marshall, Dean of Information and Policy Sciences
ABSTRACT

The objective of this thesis is to provide a software tool to support the Deputy Chief of Staff for Personnel and Staff Function of the Indonesian Navy in making decisions with fast, timely, relevant, up-to-date and accurate information regarding Personnel Management activities.

A database design is proposed including the logical and physical phases and an implementation of a personnel database prototype is undertaken on a microcomputer using dBase II.
# TABLE OF CONTENTS

## I. INTRODUCTION ............................................................................. 8

## II. BACKGROUND ............................................................................. 11

A. INTRODUCTION ............................................................................. 11

B. PERSONNEL MANAGEMENT FUNCTIONS .................................... 11

C. PERSONNEL SYSTEM REQUIREMENT ......................................... 13

D. THE CRUCIAL PROBLEM IN THE PRESENT SYSTEM ................... 14

E. CAREER MANAGEMENT CONTROL ............................................ 15

## III. DATABASE DEVELOPMENT PROCESS ........................................ 17

A. SYSTEM DEVELOPMENT ............................................................. 17

B. DATABASE SYSTEM CONCEPT .................................................... 22

C. DATABASE DESIGN ................................................................. 27

D. RELATIONAL DATABASE DESIGN .............................................. 33

## IV. DATABASE IMPLEMENTATION .................................................... 38

A. INTRODUCTION ............................................................................. 38

B. RELATIONAL DESIGN AND APPLICATION ................................. 40

C. INTERRELATIONAL CONSTRAINTS ............................................. 42

D. THE DESIGN APPROACH .......................................................... 43

E. SYSTEM CONSTRAINTS ............................................................... 45

F. SYSTEM EXPANDABILITY ......................................................... 45

G. HIERARCHY CHART OF THE SYSTEM ....................................... 46

I. IMPLEMENTATION ........................................................................ 47

## V. CONCLUSION AND RECOMMENDATION .................................. 54
<table>
<thead>
<tr>
<th>APPENDIX A: USER MANUAL</th>
<th>56</th>
</tr>
</thead>
<tbody>
<tr>
<td>APPENDIX B: DATA DICTIONARY</td>
<td>59</td>
</tr>
<tr>
<td>APPENDIX C: TABLE CODE</td>
<td>64</td>
</tr>
<tr>
<td>APPENDIX D: PROGRAM LISTING</td>
<td>70</td>
</tr>
<tr>
<td>LIST OF REFERENCES</td>
<td>118</td>
</tr>
<tr>
<td>BIBLIOGRAPHY</td>
<td>119</td>
</tr>
<tr>
<td>INITIAL DISTRIBUTION LIST</td>
<td>120</td>
</tr>
</tbody>
</table>
### LIST OF FIGURES

<table>
<thead>
<tr>
<th>Number</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.1</td>
<td>Tasks of Systems Analyst</td>
<td>17</td>
</tr>
<tr>
<td>3.2</td>
<td>Waterfall model of the software life-cycle</td>
<td>18</td>
</tr>
<tr>
<td>3.3</td>
<td>Entity examples</td>
<td>29</td>
</tr>
<tr>
<td>3.4</td>
<td>Entity set diagram</td>
<td>29</td>
</tr>
<tr>
<td>3.5</td>
<td>Relationship</td>
<td>30</td>
</tr>
<tr>
<td>3.6</td>
<td>From unnormalized to first normal form</td>
<td>33</td>
</tr>
<tr>
<td>3.7</td>
<td>Second normal form</td>
<td>34</td>
</tr>
<tr>
<td>3.8</td>
<td>Third normal form</td>
<td>34</td>
</tr>
<tr>
<td>4.1</td>
<td>Bachman diagram</td>
<td>38</td>
</tr>
<tr>
<td>4.2</td>
<td>Example of job relational</td>
<td>42</td>
</tr>
<tr>
<td>4.3</td>
<td>Hierarchy chart of the system</td>
<td>45</td>
</tr>
<tr>
<td>4.4</td>
<td>Main menu selection</td>
<td>46</td>
</tr>
<tr>
<td>4.5</td>
<td>Query menu selection</td>
<td>47</td>
</tr>
<tr>
<td>4.6</td>
<td>Example of menu for Military Education Level</td>
<td>47</td>
</tr>
<tr>
<td>4.7</td>
<td>Example of officers list attending Military Education Level</td>
<td>48</td>
</tr>
<tr>
<td>4.8</td>
<td>Job menu selection</td>
<td>49</td>
</tr>
<tr>
<td>4.9</td>
<td>Option for the same rank or after promotion</td>
<td>50</td>
</tr>
<tr>
<td>4.10</td>
<td>Example of jobs placement for officer</td>
<td>50</td>
</tr>
</tbody>
</table>
ACKNOWLEDGMENTS

I would like to acknowledge the help of those who made this thesis possible. First, of course there are Professor Daniel Roy Dolk and Professor Richard Allin McGonigal, both of whom showed great understanding during the time that it took to finish the thesis. I am also very grateful to Captain Frederick W. Weber, Jr., US Army and Lieutenant Mark L. Scire, US Coast Guard assisting in the editing of this thesis.
I. INTRODUCTION

The most important resource in any organization is its personnel. All aspects of an organization are dependent on personnel, so a large measure of the success of an organization depends on properly managing its human resources. This makes personnel management a critical task.

Decisions which affect personnel must be carefully planned. Personnel are human beings, unlike other resources such as materiel or money. Materiel may be moved about without the same considerations involved with moving people. Materiel does not need a life-cycle management system as complex as personnel management.

The personnel administration cycle consists of procurement, classification, education, utilization, treatment, and separation [Ref. 1]. Each phase must be carefully planned and followed by a decision that requires information support. The information support must be accurate, timely and relevant.

Human memory is limited and does not always process information fast enough. A computer can aid the human mind because it has the capability to process large amounts of data with high accuracy and little error.

In light of the needs and capabilities described above, this thesis will discuss personnel management base on
database management using microcomputers as decentralized activities. This thesis will investigate the use of a microcomputer for processing personnel management data. It will show how a decentralized database system can provide information to assist a Deputy of Personnel and Staff Function in decision making regarding personnel management activities.

This system, which keeps track of an officer’s career (job placement, promotion, education, training, etc), provides current information regarding an officer’s career and shows what kind of jobs or education/training should be scheduled for a certain officer to gain required knowledge and experience before being assigned a specific job.

A reorganization of the Indonesian Navy was applied at the end of 1985. Because of the restructuring and insufficient information about the existing personnel system, this thesis presents only a prototype for implementation.

Chapter II discusses the Indonesian Navy personnel function activities and crucial problem in the present system, which the prototype is designed to address.

Chapter III reviews the database development process, which includes: the general system analysis and design, the database system concept and the advantages and disadvantages of using it, and introduction to database design (both
logical and physical), with special emphasis on relational database design which focuses on the relational forms and the characteristics of relational databases.

Chapter IV describes the implementation of this personnel database system for Indonesian Naval Officers, particularly the Officer Career System.

Finally chapter V presents the conclusion that database processing applied to the Indonesian Naval Officer Career System, can increase decision making ease, timeliness, confidence, and reliability.

Programs using dBase II are provided so the user can easily interact with the computer to get information about the officer career field. These programs are shown in Appendix D.
II. BACKGROUND

A. INTRODUCTION

The Indonesian Navy has many subsystems, one of which is the Navy Personnel System. The Navy Personnel System is concerned with personnel resource utilization, and management of other resources to make the Indonesian Navy organizationally effective and efficient in supporting national defense and security.

B. PERSONNEL MANAGEMENT FUNCTION

The Indonesian Navy personnel system has two main functions; Manpower Management and Personnel Administration.

1. Manpower Management

In general the main functions of Manpower Management are: To investigate activities and to determine personnel requirements including qualification, quality and quantity for supporting the Indonesian Navy’s main tasks.

2. Personnel Administration

Personnel activities have the following life-cycle functions: Procurement, Classification, Education and Training, Utilization, Treatment and Separation.

a. Procurement

Personnel procurement is the process of acquiring new personnel from national human resources according to Indonesian Navy Organization requirements.
b. Classification

Personnel classification is the process of analyzing and classifying individuals by job/occupation, so that individual requirements and organizational requirements are in balance.

c. Education and Training

Personnel education and training are the processes and activities which impact knowledge for personnel development related to assignments and promotions.

d. Utilization

Personnel utilization is the process and activity of selecting the right people for promotion and job/assignment. By placing the right person in the right place, the personnel assignment system facilitates maximum exposure and chances for individual promotion. Maximum exposure and promotion support future personnel assignments.

e. Treatment

Personnel treatment is a complex field, and is not an easy job. Activities in this category include salary, allowance (wife, children), morale, leave, recreation, rewards or awards, medical, insurance, etc.

f. Separation

Personnel separation is the process and activity of keeping a satisfactory balance within the organization while dealing with personnel retirement. Personnel retirement occurs:
When manpower control and composition needs in the organization result in personnel separation (reductions in force).

Because of normal retirement.

C. PERSONNEL SYSTEM REQUIREMENT

Information to support decisions by the Deputy of Personnel must be relevant, timely and correct.

The organization must maintain many files in the personnel system such as payroll, separation, reward, classification, education and occupation. In a file processing environment, these result in a high degree of data redundancy and are difficult to maintain and update. For example, after a promotion all files related to rank must be changed. Similarly, for personnel career planning, all education data, occupation data, and rank data must be provided on the same report.

It is not easy to retrieve information from different files in a short time, and it is inefficient to support these kinds of information needs using file systems. In order to avoid duplication, and to facilitate fast retrieval, a relational database system may be a desirable alternative.

Using a relational database system allows an organization's data to be processed as integrated files. It reduces artificially imposed constraints caused by separate applications and permits the Deputy of Personnel and his staff to access data more naturally.
D. THE CRUCIAL PROBLEM IN THE PRESENT SYSTEM

Personnel Administration cycles like training, career planning, promotions, job placement and separation pose many administrative problems. Training must have standardization grades, personal records for each trainee, personal biography etc. It is difficult to maintain and retrieve such data accurately and quickly.

The Navy Officer promotion system recognizes two periods in a year, April and October. So much data must be collected for supporting the candidate's promotion that it is difficult to retrieve data from the source. Sometimes human errors occur or too much data is collected.

When career planning is done by hand, the same problems recur because one must collect and gather data from a filing cabinet and then match it with each person and job.

When updating data related to promotion, a new job or new education it is difficult to manipulate data manually. When calculating a pension for example, it is difficult to provide information quickly because the birth date must be subtracted from the current year by manual methods. When the executive or the Chief of Staff needs adhoc information from the Deputy of Personnel, manual systems cannot provide results quickly, thus he cannot make the decision with confidence.
E. CAREER MANAGEMENT CONTROL

Three main activities occur in career control: promotion, education/training and job placement. Each closely supports the others.

1. Promotion

As mentioned earlier, the regular officer promotion system recognizes two periods in a year, April and October. Three or four months before, the candidates are proposed from naval stations/bases such as West Fleet, Marine Corps and other Main Commands. Much data must be collected to support the candidate's promotions, such as conduct, previous jobs, rank history, education and training history, and other administrative information.

Sometimes this information appears with manual typing error or incorrect information because of human errors, and much time is lost correcting it.

After collecting this information, the career control staff can examine and clarify which officers are eligible for promotion. Education, job placement and date of rank determine eligibility. The staff then matches this data with data from the personnel data bank. This procedure, if done by manual methods as is currently the case, is very time consuming and requires much staff and clerical support.

2. Educational

The educational system and its administration is a bit different from the promotion system. Information about
education comes from centralized activities, but the same administrative process occurs as with the promotion system.

An example is the military education level from general development, for example the Second Officer Continuing Education corresponding to the US Army Officer Advanced Course. By collecting and gathering the data from filing cabinets, the career control staff can clarify and examine which officers are eligible to attend this course. After that they send a message/telegram to the Main Commands or Naval Stations. Main Commands then respond concerning the officer’s eligibility for this course by sending a message back to Deputy for Personnel. Again the career control staff handles this information from all the Main Commands and Fleets. A lot of time is spent in clerical tasks, and even more staff is needed to handle educational activities.

3. Job placement

For regular job placement the peak load activities happen as the officer nears the end or finishes a course. After examining the officer’s previous job experiences and educational background, the career control staff examines alternatives and decides where the officer would best serve in a new job. Again, if it is done by manual methods, sometimes information is incorrect and it is time consuming to correct. Just as with the promotion and educational systems, the officer data are kept in filing cabinets.
III. DATABASE DEVELOPMENT PROCESS

A. SYSTEMS DEVELOPMENT

The software engineering field is interesting and challenging because it requires the combination of both science and art. Software is an intangible thing, so it is more difficult to measure, evaluate and estimate than other engineering products.

1. The Roles of Systems Analyst

The Systems Analyst is known by various names such as Systems Engineer, Systems Designer, or Programmer Analyst. Currently System Analysts are usually located in or near the computer functions in an organization. It is most common to find them in a project development department which reports to the director of the information system, although Systems Analysis and Design are sometimes decentralized into the functional areas that process information.

A Systems Analyst tries to trace the current systems /manual systems and uses various means of information gathering techniques, such as interviews, questionnaires, observation, and document examination. He must try to choose the techniques that best fit the situation of the user organization. He also must evaluate this information...
in order to recognize the problem and provide alternative solutions (Figure 3.1).

![Diagram]

**Figure 3.1** Tasks of Systems Analyst.

2. **Software Life Cycle**

The software engineering process is very complex. If software engineering is not provided with comprehensive and integrated tools, techniques and disciplines that support all activities of the development life cycle, productivity and quality can not be expected to realize substantial gains. The software life cycle may be fundamentally partitioned into the development phase and the operations and maintenance phase. There are many interpretations of the various development phases of software, but the important thing to remember is that the larger the project, the more detailed the engineering design phase must be. One methodology for software life cycle is the Waterfall model. [Ref. 2], is illustrated in
figure 3.2. The original version was presented in Royce, 1970 and was foreshadowed in various U.S Air Force and industry publications such as Air Force, 1966 and Rosove, 1967.

Figure 3.2 Waterfall model.
As seen above, each phase culminates in a verification and validation activity. By verification and validation one can eliminate as many problems as possible in the results of that phase. So each product phase is the basis for the next product phase.

a. System Feasibility

System feasibility must consistently, comprehensively and accurately represent the user requirements. System feasibility is determining its life cycle feasibility and superiority to alternate concepts. The model of the system at the system feasibility level must support analysis and validation of the required operational capability as well as understanding the user and the developer.

b. Software Plan and Requirements

This phase determines the required functions, interfaces, and performance for the software product. Another activity is supporting the analysis of all subsystems from the system viewpoint such as communications and peripheral devices. The objective of this phase is to provide requirements for each of the subsystems. This involves trade-off studies of the overall system model to arrive at a complementary set of requirements for each subsystem that will, when integrated, collectively provide the behavior identified in the software plan and requirements.
c. **Product Design**

In this phase we consider the primary deliverable for software design. The design specification is a document with verified specification of the overall hardware/software architecture, control structure and data structure for the product. The design specification serves dual roles by providing a guide to software implementation (coding) and testing, and assisting the maintainer after software has been released. The specification can undergo considerable change during the software life cycle, therefore it is essential to review the design documentation at each step in the development phase. This phase can also provide a user manual’s draft and test plan if necessary.

d. **Detailed Design**

With the use of a design representation that may be graphical, textual or tabular a detailed procedural specification for the software is created. Like a blueprint, the detailed design specification should provide sufficient information for someone other than the designer to develop the resultant source code.

e. **Coding**

The final objective of software engineering is to translate representations of software into a form that can be understood by the computer. In this phase the
activity is a process that transforms a design into a programming language, such as Pascal, Cobol, Fortran, or dBase II

i. Integration

After each program component is tested individually, the next step is integration testing. The program components are put together and the application is tested in its entirety.

g. Implementation

In this phase the software product is fully operational on the hardware system.

h. Maintenance

Maintenance is critical in the database environment because changes to a data element can affect several application programs. During the use of a large program errors will occur which must be corrected.

There are many activities during maintenance such as:

1. Correction because of one or more coding errors.

2. Correction because of changing environment (new generation of hardware system, new operating system, new software version etc).

3. Correction to improve the software even though it may not have any errors.

B. DATABASE SYSTEM CONCEPT

Demands on data processing professionals to improve the effectiveness and efficiency of their organizations have
caused them to turn to database technology. Unfortunately many organizations are switching to a database approach with little or no understanding of the concept.

Database systems in general stress controlled data redundancy, faster processing time, higher reliability, reduced storage requirements, program independence from changes in the storage structure, control of data administration, and a better definition of data. A database system is powerful, but to achieve these goals is not a simple matter.

1. Data as a Resource

Data has no value if it cannot be processed or retrieved in a timely and accurate manner. With the growth of computer capability in terms of more speed and memory, we can now process information rapidly and consistently.

Using file system applications, data is usually associated with a single functional application program, for example personnel data is associated with a personnel department program, logistics data is with a logistic department program, and payroll with a accounting department program. Some items might be stored in more than one functional area. For example, name and rank might be stored in the personnel department, accounting department and logistic department. Once the data itself is modified or changed, all the functional areas must change that data.
This is not efficient. As a result we get redundant and inconsistent data that increases the possibility of errors.

When using a database, the data must be commonly defined and consistently organized. Data must be organized so that they can be used by the entire system. Any update in one area must update all of the database records relating to this data regardless of where they are stored. This approach reduces and controls duplicate data storage and also makes integrated processing possible.

2. Database Management System

Database has been defined in many ways in the literature. Kroenke's definition [Ref. 3] is that a database is a collection of files and relationships among records in those files. Actually a database is more than a collection of files; it is a collection of integrated files.

A database management system (DBMS) is an integrated software package that allows users to define the structure of the database, access the database and administer the database. One or more languages is provided to accomplish these tasks.

The data manipulation language (DML) is a language used to access the data in the database; a DML is used to perform insertions, deletions, changes, and retrievals. Also DML can be defined as an extension to a host programming language, such as COBOL, FORTRAN and query language (QL). The data definition language (DDL) is used
to define the logical structure of the database and can be used to specify data items and their interrelationships.

The primary advantage of using a DBMS is that it provides data independence which means the database user does not need to be familiar with implementation details. Changes can be made to the data or to the schema with little impact on application programs using that data.

A second advantage is that it provides an integrated package of tools for handling data with greater standardization and control.

However, a general purpose DBMS might not be as efficient for a specific application as specialized software.

3. Database Administration

A database design project must have its own centralized administration. The systems development manager, therefore, must ensure that controls for the systems development project are not neglected.

Because of the shared nature of the data resource in the database approach, a centralized function is required to manage and protect it. Access to this data must be controlled. No function can be allowed to modify the data without the permission of the individual who is responsible for that. The Database Administrator is responsible to maintain access and security for all of the data.
Database Administration is a very complex job because the information which the user needs is varied and wide-ranging. Thus the Database Administrator must deal with providing the requested information. Issues to be considered include:

a. Whether different functional areas need to share the database.

b. Whether all levels of management (upper, middle, lower) need the information and how to structure the database to solve this problem.

c. The database structure which must be implemented to provide information in an accurate, relevant, and timely manner. The more information we need, the more data structure must be designed.

4. Advantages and disadvantages of using a database

File systems and database system each have their own advantages and disadvantages [Ref. 3: pp. 3-7].

a. Advantage of Using a Database:

1. Enables more information to be produced from a given amount of data.

2. Elimination of duplication saves file space, and to some extent, can reduce processing requirements. The most serious problem of data duplication is that it can lead to a lack of data integrity. A common result of a lack of data integrity is conflicting reports. Perhaps nothing is more aggravating to management or more embarrassing to the data processing staff than to be confronted with computer reports that disagree.

3. Creation of program / data independence. Data independence means that when the data structure changes, application programs keep running without being changed.

4. Better data management. When data are centralized in a database,
one department can specialize in the maintenance of data. That department can specify data standards and ensure that all data adhere to the standards. When someone has a data requirement, he or she can contact one department instead of many file maintenance groups.

5. Allows query language with easier programming and makes it easier to retrieve sophisticated information in DBMS environment.

b. Disadvantages of using a database

1. Using a database can be expensive. The DBMS may occupy so much main memory that additional memory must be purchased. Conversion from existing systems can be costly, especially if new data must be acquired. Operating costs and overhead for some systems will be higher. For example, sequential processing of payroll will never done as fast in the database environment.

2. Database processing tends to be complex. Large amounts of data can be interrelated in the database. This means more sophisticated programming, and of course highly qualified systems and programming personnel are required.

3. Backup and recovery are more difficult. Because of increased complexity and because databases are often processed by several users concurrently, backup and recovery are more difficult.

4. Security more difficult. Integration, and hence centralization, increase vulnerability to security problems because all data are centralized under one system.

C. DATABASE DESIGN

A database contains a diversity of related data so that typically the equivalent several files are used to hold the
Other files may be needed to hold descriptive information about the data and their relationships.

The analysis of databases concentrates on logical structures. The result of this analysis is a precise specification of the contents and required manipulations for the database.

An integrated collection of support programs and file structures to support a database, its logical requirements, and an interface to user program is called a database management system. For that reason alone, the design of a database will be the most important component affecting how well a system will work.

The design of a database describes how the data in the system is divided into the different files or records.

Database design basically has three steps:

- Decide what data should be stored.

- For the logical database design, identifying data entities, attributes, and relationships.

- For the physical database, it means physical storage of data on storage devices and the resultant performance of the database design.

1. **What Data Should be Stored**

   If the system is at all complex, the designer needs to consider what kind of data should be stored. First he must look at the output or proposed output. Before the required output can be displayed on a screen or printed on a report, the data must be in the database somewhere. For example, if the system must print personnel addresses, it
will need the name, street, city, zip code and so on. Or, if the system needs to know how old personnel were when they retired, the designer must store data from which age may be calculated (for example, birth date and the retirement year).

Most of the data entered will appear immediately on the output reports, but not always. The user may decide that a piece of data is not being used now, but might be needed in the future. The solution in such a case should be to enter it now. This may cause a little more data entry, but it is easier to have data entered as it is captured, rather than later when it may not be available.

2. **Logical Database Design**

A database contains many types of data items. These data items have to be associated into a database structure. A systems analyst tends to group together in records collections of data items which data processing views as being useful. The logical database structure is the foundation on which most future data processing will be built. Future organizations will be managed with database resources, networks to access the databases, and end-user software for employing and updating the data.

The logical design begins with an investigation of user requirements and ends with a logical description of a database that can support those requirements. Logical
description such as data models present logical views of real entities and their relationships. An entity may be a tangible object such as a person. It may be intangible such as a job title. Entities have properties, called attributes, which associate a particular value from a domain of attribute values with each entity. Examples of attributes are color or name. Usually the domain for an attribute will be a set of integers, real numbers, or strings. An entity usually has a data item that uniquely identifies it.

For example, employee number is the unique identifier of the employee entity. Figure 3.3 is a sample of entities and attributes. Shown below the serial number is a unique key. Entity sets can be represented by a labeled box, see figure 3.4. Data models describes entity sets, entities, attributes and their relationships. Relationships among them are addressed by the relational model. Examples are relationships between college, departments, professors, and courses.

| Attributes |
| Serial # | Name   | Address   |
|          |        |           |
| 001234   | David  | Ocean Ave |
| 002134   | Mike   | Seventh St|
| 006789   | Fred   | Third Ave |

Figure 3.3 Entity set example.
College, department, professor, and courses are identified as entity sets. Figure 3.5 shows the relationships between these entity sets. The relationship between college and its departments is called one-to-many, in that any one college may have many departments (Administrative, Computer, ORSA). The same relationship exists between departments and their courses.

Many-to-many is the relation between Professors and Courses: One professor can teach many courses, and one course can be taught by many professors.

Figure 3.4 Entity set diagram.

Figure 3.5 Relationship diagram.
3. **Physical Database Design**

The result of the physical database design is specification of the storage allocation parameters. Setting up the database on a real computer is called physical database design. In other words, the physical database is the component of the database that confirms the computerized version of the logical database.

The physical database consists of five components [Ref. 4: pp. 30-33]: storage structure, access strategy, data loading, data update, and data maintenance.

Knowledge of the storage structure is important because it indicates the power of the DBMS for certain applications. The storage structure is the physical architecture construction. It consists of dictionary, indexes, relationships, data. The dictionary is the repository of the information represented by the compiled data definition language. Each DBMS’s dictionary is unique.

For faster access, index mechanisms are needed. There are two kinds of indexes, primary and secondary. The primary indexes are unique value guaranteed and the secondary indexes are repeated values allowed.

The connections between record occurrences are called relationships. There are two kinds of relationships, static and dynamic.

The data part of the storage structure contains the occurrences of the records. Static DBMS have multiple record
type data storage structures. Dynamic DBMS have a separate
data storage structure for each record type.

An access strategy is a collection of routines that insert data into and retrieve data from the database. Understanding access strategy is basic to knowing why certain operations take longer than others.

Data loading is the process of inserting large quantities of data into the database at one time. Some DBMS allow or require data to be loaded in certain ways to achieve efficiencies during subsequent updating and reporting.

The updating process attempts to ensure current data. Critical in the updating application is how well the DBMS handles additions of new records, modification of element values, modifications of relationship occurrences and deletions of existing records.

The most important requirement for database maintenance is the creation of a backup copy of a database. While creating a backup is certainly the first step in backup-and-recovery, the nature of the backup process needs to be understood so that sufficient resources can be allocated to its accomplishment.

D. RELATIONAL DATABASE DESIGN

In a filing system, each functional area has its own files and procedures. Because of this there is a complex flow of paperwork between the functional areas. In this
case data for different areas are separately maintained in separate files. It is hard to manage this data. Accuracy is lost, and maintenance and change are difficult to accomplish.

But when data are designed into an integrated database system, the data structures become more complex but the data flows are simplified. The data are consistent and accurate.

Changes in procedures can be made rapidly. Fundamentally different analysis and design techniques are needed.

1. **Relational normal forms**

   When modification of data has unexpected consequences, it is referred to as a modification anomaly. A deletion anomaly exists if the deletion of one entity deletes facts about a second entity. An insertion anomaly exists if an insertion of a fact about one entity cannot be made until a fact about a second entity is known. Anomalies can be removed or eliminated through normalization, but this normalization process can create an interrelation constraint.

2. **Normal Forms**

   All relations are by definition in first normal form. When there are no repeating groups the relation is in first normal form. See figure 3.6
A relation is in second normal form if all nonkey attributes are dependent upon all of the key attributes. No attribute is dependent upon only part of the key. The second normal form is illustrated in Figure 3.7.

UNNORMALIZED RECORD:

<table>
<thead>
<tr>
<th>Order</th>
<th>Order Date</th>
<th>Customer Name</th>
<th>Customer Address</th>
<th>Product Number</th>
<th>Product Name</th>
<th>Quantity Ordered</th>
<th>Product Price</th>
<th>Product Total</th>
<th>Product Total</th>
</tr>
</thead>
</table>

FIRST NORMAL FORM: Remove the repeating group.

Order

Order	Product

ORDER | ORDER | CUSTOMER | CUSTOMER | ORDERED | PRODUCT | QUANTITY | PRICE | TOTAL |

(REPRINTED FROM [Ref. 5: p. 180])

Figure 3.6 From unnormalized to first normal form.

When relations are in second normal form, they may have transitive dependencies. These dependencies are removed by placing the relation in third normal form.

A relation is in third normal form if it is in second normal form and has no transitive dependencies. All attributes must depend upon all of the key, and dependencies are not transferred from one attribute to another. Third normal form is illustrated in figure 3.8.
SECOND NORMAL FORM: Remove attributes not dependent on the whole of a (concatenated) primary key as in the ORDER PRODUCT record above.

<table>
<thead>
<tr>
<th>ORDER #</th>
<th>ORDER DATE</th>
<th>CUSTOMER</th>
<th>CUSTOMER NAME</th>
<th>CUSTOMER ADDRESS</th>
<th>PRODUCT</th>
<th>TOTAL</th>
</tr>
</thead>
</table>

Order-Product

<table>
<thead>
<tr>
<th>ORDER #</th>
<th>PRODUCT #</th>
<th>QUANTITY</th>
<th>PRODUCT</th>
<th>TOTAL</th>
</tr>
</thead>
</table>

Product

<table>
<thead>
<tr>
<th>PRODUCT #</th>
<th>PRODUCT NAME</th>
<th>PRODUCT PRICE</th>
</tr>
</thead>
</table>

(Reprinted from [Ref. 5: p. 181])

Figure 3.7 Second Normal Form.

THIRD NORMAL FORM: Remove attributes dependent on data items other than the primary key, as in the ORDER record above.

Order

<table>
<thead>
<tr>
<th>ORDER NUMBER</th>
<th>ORDER DATE</th>
<th>CUSTOMER</th>
<th>CUSTOMER NUMBER</th>
<th>CUSTOMER TOTAL</th>
</tr>
</thead>
</table>

Customer

<table>
<thead>
<tr>
<th>CUSTOMER NUMBER</th>
<th>CUSTOMER NAME</th>
<th>CUSTOMER ADDRESS</th>
</tr>
</thead>
</table>

Order-Product

<table>
<thead>
<tr>
<th>ORDER NUMBER</th>
<th>PRODUCT NUMBER</th>
<th>QUANTITY</th>
<th>PRODUCT</th>
<th>TOTAL</th>
</tr>
</thead>
</table>

Product

<table>
<thead>
<tr>
<th>PRODUCT NUMBER</th>
<th>PRODUCT NAME</th>
<th>PRODUCT PRICE</th>
</tr>
</thead>
</table>

(Reprinted from [Ref. 5: p. 181])

Figure 3.8 Third Normal Form.

36
3. **Relational Database Design Criteria**

The first design criterion is elimination of modification anomalies. If relations cannot be put into normal form, then modification anomalies do not happen. Relations that are in normal form are preferred, and normal for that is become is a design objective.

Relation independence is the second design criterion. Two relations are independent if a modification can be made to one relation without affecting the other relation. Relation dependence is sometimes caused by normalization to remove modification anomalies. This effect causes a conflict in design criteria.

The third criterion is ease of use. The design should structure relations so that they are familiar and natural to the users.
IV. DATABASE IMPLEMENTATION

A. INTRODUCTION

The main purpose of this chapter is to design a database system which may be used by the Indonesian Navy Deputy of Personnel to make more effective decisions.

Personnel management was previously defined as those managerial activities that deal with procurement, development, maintenance, utilization and separation. This is also known as the personnel management cycle. For supporting these activities, data must be accurate and timely. All of the personnel activities are controlled by the Deputy of Personnel. These include education, training, promotion, and job evaluation.

The computer can help support the Deputy of Personnel with various decision making processes because of its speed and accuracy in processing large amounts of data.

An organization can more easily decentralize its operations when it uses interactive processing. This adds a new dimension to the Personnel Management Information System by allowing easy editing and filing of existing and new data.

After careful analysis, it was decided that the functional requirement described in Chapter II suggested the application of a relational database. This justification was
based not only upon various possible record relationships, but also the frequency and volume of the expected transactions. Promotions occur regularly twice a year. Officers are selected for promotion based on requirements because of job vacancies particularly for the colonel and flag officer. For this purpose the system should be designed with a query capability.

For example the amount of officer records is around 8000, with five to seven percent eligible for promotion, and because of limited vacancies only two or three percent actually are promoted accepted.

The same thing occurs in educational and job placement. Comparing the officers' chances for various schools, the most significant hurdle is from Second Officer Educational level to Command and Staff College Level. This happens once a fiscal year and is usually followed by job placement. This kind of job placement is predictable, so it can be prepared as the officer nears the end or finishes a course. But managers still need some queries to handle this problem, because there are many irregular job placements because of job requirements from outside the Navy organization, for example D O D. The system should be able to provide relevant information immediately to support fast decision making by the Director of Personnel or Staff to fill those job vacancies.
The above is based on career applications only. Besides this, there are other applications such as rewards and pension. Again, the system should eventually be able to handle all personnel officer activities.

B. RELATIONAL DATABASE DESIGN AND APPLICATION

There are many ways in which a database can be designed. This design will describe a design theory and application for the Indonesian Naval Officer Personnel System, particularly the career system, where education, rank and job evaluation are involved.

The most important phase in the design of a database is in the relational database design, where the record relationship and record structure will be developed.

1. Record Relationship

Relationships can be specified in a variety of ways. One technique is called a Bachman diagram or structure diagram. See figure 4.1.

![Bachman diagram](image)
The above diagram shows the relationships among records. The single and double arrow notation is used to express relationships among records. There are four different relationships, one-to-one, one-to-many, many-to-one, and many-to-many relationships.

Examples as follows:

a. One-to-one.
An officer can only have one set of body characteristics and vice versa.
OFFICER <----> BODYCHAR.

b. One-to-many.
One officer may have attended several military schools.
OFFICER <-----> MILEDU.

c. Many-to-one.
Many different jobs in job records history will have been performed by one officer.
JOBOFF <-----> OFFICER.

d. Many-to-many.
An officer can be eligible for many jobs or vice versa.
OFFICER <-----> JOBLIST.

2. Record Structure

Record structure shows the relationships among attributes, where the key attribute is underlined and uniquely identifies each record. For many-to-many relationships between records, another record is needed, called an intersection record. This record is a device for integrating two or more files and the keys of the files being integrated must appear in the intersection record. Examples of record structure as follows:
1. Personal identification
   OFFICER (SERNO, NAME, CORPS, RANKID, EDUID, SEX,
   BIRTHDD, BIRTHMM, BIRTHYY, BIRTHP, RELIGION)

2. Body characteristic
   BODYCHAR (SERNO, WEIGHT, HEIGHT, SKCOLOR, HRTYPE,
   EYECOLOR, BLOOD, SHOE, HAT, UNIFORM)

3. Rank (intersection)
   RANK (SERNO, RANKID, RANKDD, RANKMM, RANKYY,
   RORNO, RDATORNO)

4. Military education (intersection)
   MILEDU (SERNO, MEDURANK, MEDLEVID, MEDUID,
   MDDEDST, MMNEDST, MYYEDST, MDDEDED, MMEDED,
   MYEDED, MEDUDUR, MEDURSLT)

5. General education (intersection)
   CIVEDU (SERNO, CEDURANK, CEDLEVID, CEDUID,
   CDDDEDST, CMMNEDST, CYEEDEST, CDDDEDED, CMMDEDED,
   CYEDED, CEDUDUR, CEDURSLT)

6. Occupation (intersection)
   JOBOFF (SERNO, JOBID, JOBANK, JOBDD, JOMB,
   JOMY, JOBEC, JORNO, JDATORNO)

7. Occupation list
   JOBLIST (JOBID, JOBDES, ECHELON, JOBSTAT)

8. Rank requirement for occupation (intersection).
   JOBRNK (JOBID, JOBRRK)

9. Corps requirement for occupation (intersection).
   JOBCORP (JOBID, JOBCO)

10. Military education requirement for occupation
    (intersection). JOBEDU (JOBID, JOBED)

11. Military education list
    MEDULIST (MEDUID, MEDUDES)

12. General education list
    CEDULIST (CEDUID, CEDUDES)

13. Rank list
    RANKLIST (RANKID, RANKDES, RKECHREQ)

C. INTERRELATIONAL CONSTRAINTS

As Kroenke says [Ref. 3: pp. 286, 305], not all
relational database designs are equal, some are better
than others. The important point is, a design that meets the user's needs is better than one that does not.

When a relation is normalized, this often may eliminate modification anomalies at the expense of creating interrelational constraints. The elimination of anomalies may, however have a disadvantage as well. Everytime a record is split into two or more relations an interrelational constraint is created. The initial job relation had modification anomalies because it was not in 2nd normal form. We eliminated these anomalies by splitting the relation into the "JOBOFF" and "JOBLIST" relations.

The interrelation constraints occur, because two relations share the attribute "JOBID". However a "JOBID" may not exist in "JOBOFF" if it is not in "JOBLIST".

We can say that the values of "JOBID" in "JOBOFF" must be a subset of the values on "JOBID" in "JOBLIST". See figure 4.2.

![Figure 4.2 Example of JOB relational](image)

D. THE DESIGN APPROACH

The design of this system was approached by considering the output required and anticipating the questions and
queries that management might ask. Output would be provided in both screen and printed form.

The following are examples of some queries and output form:

1. Query rank.
   a. Gives the information about all of officers in a certain rank, screen or printer.
   b. List an officer's promotion history by entering his serial number, screen or printer.

2. Query education.
   a. Gives the information about all officers who have a military education level (e.g., Command and Staff College level), screen or printer.
   b. Gives the information about all officer who have a specified military education (e.g., Navy Command and Staff College), screen or printer.

3. Query job.
   a. List all officers eligible for a certain job, screen or printer.
   b. List all jobs which an officer may be eligible for, screen or printer.

4. Print personnel.
   a. Gives all information about all of the officers list by by name (screen or printer).
   b. Gives all information about all of the officers listed by serial number (screen or printer).

Based upon the estimated outputs, the next step was to define what kind of data was required to support these outputs and what kind of record structure should be included into the dBase II database. (See data dictionary Appendix B.)
E. SYSTEM CONSTRAINTS

The system has certain hardware and software constraints. These constraints are:

1. This system must use DOS operating system version 2.0 or higher.
2. This system uses dBase II database management program.
3. This system runs on IBM PC or compatible only.
4. The widths of the output are less than 80 columns.
5. In order to make additions, changes and deletions, the users must be familiar with the design of the system and know about this data structure.

F. SYSTEM EXPANDABILITY

By the design of its data structure, this system can be expanded. Some of the possible expansions are:

1. The system can be expanded by creating and adding data files such as:
   a. Personal identification data structure (birth date, birth place).
   b. Personal characteristics (weight, height, hair color, eye color, etc).
   c. Family data (spouse, children, address, sex, birth date, and birth place).
   d. Payroll (main salary, wife allowance, children allowance, and deductions).
   e. Uniform sizes and other possible personal data.
2. By adding the above to the data structure, the output can be easily expanded to include:
   a. Output reports for payroll.
   b. Output reports for personal characteristics.
c. Output reports for occupation.

d. Output reports for families, etc.

3. Updating modules for the addition of data files as described above.

G. HIERARCHY CHART OF THE SYSTEM

The diagram below (figure 4.3) is the hierarchy chart of the system, where each block/module has a specific function, such as adding or updating a record. Each module has submodules with similar functions but different tasks, such as officer record addition, job record addition, etc.

![Hierarchy Chart of the System](image)

**Figure 4.3 Hierarchy chart of the system.**
H. IMPLEMENTATION

As mentioned before, the design of this system was approached by considering and anticipating the questions and queries that management might ask. The following are examples of queries relating to educational and job information.

1. Educational Information

After successfully "booting" the system and reaching the main menu by following the instructions in the user manual (Appendix A), the user can choose one of the main menu selections (figure 4.4).

OFFICER

MAIN-MENU

MAY 1986

A ---> ADD RECORD
D ---> DELETE RECORD
C ---> CHANGE RECORD
P ---> PRINT
Q ---> QUERY INFORMATION
R ---> RETURN TO DATABASE
S ---> RETURN TO DOS

---------------------------

SELECT AN ACTION BY LETTER ===> :

---------------------------

Figure 4.4 Main menu selections.
Selecting the <Q> option from the menu result in a query menu selection (see Figure 4.5) and again the user chooses one of them. For selecting <A> will provide the military education level for an officer. The next screen show the list of military education level and the corresponding code (see Figure 4.6).

---

Figure 4.5 Query Menu Selection.
QUERY MILITARY EDUCATION LEVEL MAY 1986

------------------------------------------------------------------------
MIL. EDUCATION # DESCRIPTION

11 NATIONAL DEFENSE
12 JOINT COMMAND & STAFF COLLEGE
13 COMMAND AND STAFF COLLEGE
14 STAFF COLLEGE
15 2nd OFF. CONTINUING EDUCATION
16 1st OFF. CONTINUING EDUCATION
17 NAVAL ACADEMY
18 BASIC OFFICER SCHOOL
19 CANDIDATE OFFICER SCHOOL

PLEASE SELECT ONE DESIRED MIL. EDUCATION NUMBER, ACCORDING TO THE ABOVE LIST (2 DIGITS PLEASE) e.g. "15" AND HIT "RETURN" KEY.

TO FINISH (RETURN TO QUERY MENU OPTION) HIT 'RETURN'

ENTER MIL. EDUCATION NUMBER (2 DIGITS):

Figure 4.6 Example of Menu for Military Education Level.

By typing <13> in response to the menu in Figure 4.6 (code for Command and Staff College level), a list of officers currently attending the Command and Staff College including serial number, name, corps and the year end's attended (see Figure 4.7) will be displayed. Before the list appears on the screen, the system asks if the user wants the display on the screen or in hardcopy form.
TABLE 4.1

<table>
<thead>
<tr>
<th>NAME</th>
<th>RANK</th>
<th>SCHOOL</th>
<th>YEAR-END</th>
</tr>
</thead>
<tbody>
<tr>
<td>BUDIYONO</td>
<td>LIEUTENANT COLONEL</td>
<td>2nd OFF. CONTINUING EDU.</td>
<td>1983</td>
</tr>
<tr>
<td>MARTIN</td>
<td>LIEUTENANT COLONEL</td>
<td>A.G ADVANCE</td>
<td>1983</td>
</tr>
<tr>
<td>SUWITO</td>
<td>LIEUTENANT COLONEL</td>
<td>INFANTRY ADVANCE</td>
<td>1983</td>
</tr>
<tr>
<td>SULIS</td>
<td>MAJOR</td>
<td>INFANTRY ADVANCE</td>
<td>1983</td>
</tr>
</tbody>
</table>

Figure 4.7 Example of Officers Attending Military Edu. Level

2. Job Information

The procedure to retrieve educational information is similar. The job information system tries to match the desires of an officer concerning eligible jobs placement and conversely a certain job for which many officers are eligible. In this prototype system a simple example is given to show a personnel officer trying to match an officer with a job description.

Each job needs eligible officers to fill it. In a simple case the basic prerequisites for job placement are rank, education and corps. Secondary considerations include other adjustment and past performance.

Given a job description and prerequisites, this prototype can help the user to match a certain job with the officers eligible by reason of rank, education, and corps consideration. Exact job descriptions and eligibility requirements are beyond the scope of this thesis. We are only suggesting how this system might expedite the job placement matching process.
After initial screening it is a simple matter for the system to output an officer's promotion history and job history to make complete information available. An example follows:

Start with the main menu and respond with the appropriate query selection; then choose or type <E> for jobs eligible for an officer (see Figure 4.8). By giving the input officer's serial number, the screen will appear with two selections: job available for the same rank, or after promotion (see Figure 4.9). After typing <a> the system responds by asking if the user needs the list on the screen or hardcopy. By typing <h> the computer gives all information on job placement after promotion correlated by rank, education, and corps (see Figure 4.10).

<table>
<thead>
<tr>
<th>QUERY</th>
<th>MENU</th>
</tr>
</thead>
<tbody>
<tr>
<td>A --- &gt; PROVIDE MIL. EDUCATION LEVEL INFORMATION</td>
<td></td>
</tr>
<tr>
<td>B --- &gt; PROVIDE ANY MIL. EDUCATION INFORMATION</td>
<td></td>
</tr>
<tr>
<td>C --- &gt; PROVIDE RANK HISTORY INFORMATION</td>
<td></td>
</tr>
<tr>
<td>D --- &gt; PROVIDE JOB HISTORY INFORMATION</td>
<td></td>
</tr>
<tr>
<td>E --- &gt; PROVIDE JOB ELIGIBLE INFORMATION</td>
<td></td>
</tr>
<tr>
<td>F --- &gt; PROVIDE OFFICER ELIGIBLE INFORMATION</td>
<td></td>
</tr>
</tbody>
</table>

TYPE RETURN KEY, RETURN TO MENU

Figure 4.8 Menu for Job Selection.
JOB AVAILABLE FOR THE SAME RANK or AFTER PROMOTION?
ENTER 's' FOR SAME RANK or 'p' PROMOTION

Figure 4.9 The option for same rank or after promotion.

JOB ELIGIBLE FOR:

<table>
<thead>
<tr>
<th>JOB-ID</th>
<th>DESCRIPTION</th>
<th>STATION</th>
<th>CITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>003</td>
<td>ASS. LOGISTIC</td>
<td>MARINE H.Q</td>
<td>JAKARTA</td>
</tr>
<tr>
<td>008</td>
<td>ASS. PERSONNEL</td>
<td>D O D</td>
<td>JAKARTA</td>
</tr>
<tr>
<td>012</td>
<td>INSTRUCTOR</td>
<td>NAVAL ACADEMY</td>
<td>SURABAYA</td>
</tr>
</tbody>
</table>

Figure 4.10 Example of jobs placement for an officer.

Conversely, given a job-id, the system will respond with all eligible officers with the same consideration given to education, rank and corps.

3. Special Job Discussion

The system described above is just a prototype, and further special work is needed. Job placement is a critical task because many factors must be considered, such as education, rank and corps.

If possible, the needs of the organization should be synchronized with the individual’s needs and desires, in order to make the officers more satisfied with their jobs/tasks.

There is a further requirement for definitions of job descriptions and eligibility requirements. This is
not an easy task because there are hundreds of jobs which must be carefully analyzed. More research is needed to accomplish this task before the system can be expanded.

Because of the very complex consideration involved in personnel management, this system remains just a tool to get more reliable, up to date and timely information to the user.
The Naval Officers Personnel System is very complex. Managing it manually demands great effort, is time consuming, requires a large staff to manage the personnel function, and is neither effective nor efficient in supporting decision making processes. Database processing can increase decision making productivity and provide relevant, accurate, and timely information.

This thesis has focused on a proposed Personnel Database System for Indonesian Naval Officers. However this system can be used for other personnel applications with a little modification. The developed sample database presented here is based on relational normal form. Normal forms can be applied to decrease inefficiency of the relational database model in the system design process, and also to decrease data redundancy.

A sample implementation using dBase II is provided in Appendix A, showing user interaction with the computer without necessarily knowing programming or database system management.

With the latest microcomputer performance and capabilities in networking, this system could be put on staff personnel desks and connected to each other in one headquarters building via a distributed network system.
without requiring more space or restructuring office setting.

A complete implementation of the system needs more data about job descriptions and prerequisites regarding education, rank, corps, sex and other considerations. Finally the system must evolve through continued use and feedback from personnel management users.
APPENDIX A
USER MANUAL

1. PURPOSE

The purpose of this manual is to describe how to run the system.

2. OBJECTIVES

This system was designed to be user friendly, expandable and maintainable.

3. CONFIGURATION OF THE SYSTEM

To run this system the following is necessary:

a. IBM PC or compatible.

b. IBM printer or compatible.

c. 2 disk drives

d. dBASE II diskette.

e. dBASE II Project diskette.

4. RECORD STRUCTURE.

There are nine record types and fifteen table codes within this system. The records and table codes are:

a. Officer identification record (OFFICER.DBF)

b. Rank record (RANK.DBF)

c. Military education record (MILEDU.DBF)

d. General education record (CIVEDU.DBF)

e. Occupation record (JOBOFF.DBF)
f. Occupation list (JOBLIST.DBF)
g. Body characteristic record (BODYCHAR.DBF)
h. Corps code table (CORPCODE.DBF)
i. Rank list (RANKLIST.DBF)
j. Military education list (MEDULIST.DBF)
k. General education list (CEDULIST.DBF)
l. Sex code table (SEXCODE.DBF)
m. Religion code table (RELIGION.DBF)
n. City code table (CITYCODE.DBF)
o. Education result table (RESULT.DBF)
p. Skin color table (COLORSK.DBF)
q. Hair color table (TYPEHR.DBF)
r. Eye color table (COLOREYE.DBF)
s. Blood table (BLOOD.DBF)
t. Uniform size table (UNIFORM.DBF)
u. Echelon code table (ECHELON.DBF)
v. Rank requirement for occupation (JOBRNK.DBF)
w. Education requirement for occupation (JOBEDU.DBF)
x. Corps requirement for occupation (JOBCORP.DBF)

For a more detailed description of the data records and tables, see Appendixes B.

5. RUNNING THE SYSTEM

a. Turn on the following devices, in order:

1. IBM PC/compatible system unit (switch on the right side).

2. The monitor (switch located on the front side).
3. The printer (Okidata, switch located on the right side).

b. Insert Operating system diskette into drive A, and the system into drive B.

c. Wait for the system to boot up, answer the prompts by entering date and time or just hit <Enter> twice.

d. When the screen format appears type <B:> to move drive B.

e. Now type <dbase pers>

f. When the system asks "enter your password please", simply type <pers>; If you fail in this section because you type the wrong password (unauthorized access), then type <do pers>.

g. Now you are in the OFFICER system which displays the main menu. The main menu will give you the choice of the following options

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>ADD RECORD</td>
</tr>
<tr>
<td>D</td>
<td>DELETE RECORD</td>
</tr>
<tr>
<td>C</td>
<td>CHANGE RECORD</td>
</tr>
<tr>
<td>P</td>
<td>PRINT</td>
</tr>
<tr>
<td>Q</td>
<td>QUERY INFORMATION</td>
</tr>
<tr>
<td>R</td>
<td>RETURN TO DATABASE</td>
</tr>
<tr>
<td>S</td>
<td>RETURN TO DOS</td>
</tr>
</tbody>
</table>

Once you are at the main menu level, just type the desired option (A, D, C, P, Q, R, S).
APPENDIX B

DATA DICTIONARY

This data dictionary contains data elements of the database of the personnel system. There are 5 columns in the table:

1. Data item. This column contains the data item as it is known to the user.

2. Acronym. This column contains the unique name for the data item that will be used by programmers/analysts.

3. Type. This column contains the data item's type. "N" means numeric and "C" means character (alphabetic).

4. Length. This column contains the number of characters used in each data item.

5. Description. This column contains the description of the data item.
### 1. Officer identification

<table>
<thead>
<tr>
<th>DATA ITEM</th>
<th>ACRONYM</th>
<th>TYPE</th>
<th>LENGTH</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serial #</td>
<td>SERNO</td>
<td>C</td>
<td>6</td>
<td>serial number, primary key</td>
</tr>
<tr>
<td>Name</td>
<td>NAME</td>
<td>C</td>
<td>25</td>
<td>The name of personnel</td>
</tr>
<tr>
<td>Corps</td>
<td>CORPS</td>
<td>C</td>
<td>2</td>
<td>Corps code (see CORPCODE table 01)</td>
</tr>
<tr>
<td>Present rank</td>
<td>RANKID</td>
<td>N</td>
<td>2</td>
<td>Present rank (see RANKLIST table 02)</td>
</tr>
<tr>
<td>Education</td>
<td>EDUID</td>
<td>N</td>
<td>2</td>
<td>Last military education (not available)</td>
</tr>
<tr>
<td>Sex</td>
<td>SEX</td>
<td>N</td>
<td>1</td>
<td>Sex code (see SEXCODE table 05)</td>
</tr>
<tr>
<td>Birth date</td>
<td>BIRTHDD</td>
<td>N</td>
<td>2</td>
<td>DD (Day)</td>
</tr>
<tr>
<td>Birth month</td>
<td>BIRTHMM</td>
<td>N</td>
<td>2</td>
<td>MM (Month)</td>
</tr>
<tr>
<td>Birth year</td>
<td>BIRTHYY</td>
<td>N</td>
<td>2</td>
<td>YY (Year)</td>
</tr>
<tr>
<td>Birth place</td>
<td>BIRTHP</td>
<td>C</td>
<td>20</td>
<td>City</td>
</tr>
<tr>
<td>Religion</td>
<td>RELIGION</td>
<td>C</td>
<td>1</td>
<td>See RELIGION table 06</td>
</tr>
</tbody>
</table>

### 2. Body characteristic

<table>
<thead>
<tr>
<th>DATA ITEM</th>
<th>ACRONYM</th>
<th>TYPE</th>
<th>LENGTH</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serial #</td>
<td>SERNO</td>
<td>C</td>
<td>6</td>
<td>serial number, primary key</td>
</tr>
<tr>
<td>Weight</td>
<td>WEIGHT</td>
<td>N</td>
<td>3</td>
<td>Weight in kg</td>
</tr>
<tr>
<td>Height</td>
<td>HEIGHT</td>
<td>N</td>
<td>3</td>
<td>Height in cm</td>
</tr>
<tr>
<td>Skin color</td>
<td>SKCOLOR</td>
<td>N</td>
<td>1</td>
<td>Color of skin (see COLORSK table 09)</td>
</tr>
<tr>
<td>Hair type</td>
<td>HRTYPE</td>
<td>N</td>
<td>1</td>
<td>Type of hair (see TYPEHR table 10)</td>
</tr>
<tr>
<td>Eye color</td>
<td>EYCOLOR</td>
<td>N</td>
<td>1</td>
<td>Color of eyes (see COLOREYE table 11)</td>
</tr>
<tr>
<td>Blood type</td>
<td>BLOOD</td>
<td>N</td>
<td>1</td>
<td>Type of blood (see BLOOD table 12)</td>
</tr>
<tr>
<td>Size of shoes</td>
<td>SHOE</td>
<td>N</td>
<td>2</td>
<td>In cm</td>
</tr>
<tr>
<td>Size of hats</td>
<td>HAT</td>
<td>N</td>
<td>2</td>
<td>In cm</td>
</tr>
<tr>
<td>Size of uniform</td>
<td>UNIFORM</td>
<td>N</td>
<td>1</td>
<td>3 sizes (see UNIFORM table 13)</td>
</tr>
</tbody>
</table>
### 3. Rank

**RANK** (Intersection)

<table>
<thead>
<tr>
<th>DATA ITEM</th>
<th>ACRONYM</th>
<th>TYPE</th>
<th>LENGTH</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serial #</td>
<td>SERNO</td>
<td>C</td>
<td>6</td>
<td>Serial number, primary key</td>
</tr>
<tr>
<td>Rank ID</td>
<td>RANKID</td>
<td>C</td>
<td>2</td>
<td>Rank code (see RANKLIST table 02)</td>
</tr>
<tr>
<td>Rank date</td>
<td>RANKDD</td>
<td>C</td>
<td>2</td>
<td>Date of rank</td>
</tr>
<tr>
<td>Rank month</td>
<td>RANKMM</td>
<td>C</td>
<td>2</td>
<td>Month of rank</td>
</tr>
<tr>
<td>Rank Year</td>
<td>RANKYY</td>
<td>C</td>
<td>4</td>
<td>Year of rank</td>
</tr>
<tr>
<td>Order Number</td>
<td>RORNO</td>
<td>C</td>
<td>8</td>
<td>Order Number with format Number(4)/Month(2)/Year(2)</td>
</tr>
<tr>
<td>Date Number</td>
<td>RDATORNO</td>
<td>N</td>
<td>6</td>
<td>DDMMYY</td>
</tr>
</tbody>
</table>

### 4. Military Education

**MILEDU** (Intersection)

<table>
<thead>
<tr>
<th>DATA ITEM</th>
<th>ACRONYM</th>
<th>TYPE</th>
<th>LENGTH</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serial #</td>
<td>SERNO</td>
<td>C</td>
<td>6</td>
<td>Serial number, primary key</td>
</tr>
<tr>
<td>Rank</td>
<td>MEDURANK</td>
<td>N</td>
<td>2</td>
<td>Rank in education (see RANKLIST table 02)</td>
</tr>
<tr>
<td>Education level</td>
<td>MEDLEVID</td>
<td>C</td>
<td>2</td>
<td>Level of education (see MEDLEV table 03)</td>
</tr>
<tr>
<td>Education ID</td>
<td>MEDUID</td>
<td>C</td>
<td>2</td>
<td>Military education (not available)</td>
</tr>
<tr>
<td>Date start</td>
<td>MDDEDST</td>
<td>N</td>
<td>2</td>
<td>Date education start</td>
</tr>
<tr>
<td>Month start</td>
<td>MMMEDST</td>
<td>N</td>
<td>2</td>
<td>Month education start</td>
</tr>
<tr>
<td>Year start</td>
<td>MYYEDST</td>
<td>N</td>
<td>2</td>
<td>Year education start</td>
</tr>
<tr>
<td>Date end</td>
<td>MDDEDED</td>
<td>N</td>
<td>2</td>
<td>Date education end</td>
</tr>
<tr>
<td>Month end</td>
<td>MMMEDED</td>
<td>N</td>
<td>2</td>
<td>Month education end</td>
</tr>
<tr>
<td>Year end</td>
<td>MYYEDED</td>
<td>N</td>
<td>2</td>
<td>Year education end</td>
</tr>
<tr>
<td>Duration of education</td>
<td>MEDUDUR</td>
<td>N</td>
<td>3</td>
<td>Duration of education (Weeks)</td>
</tr>
<tr>
<td>Place of education</td>
<td>MEDUPLCE</td>
<td>C</td>
<td>3</td>
<td>Place of education (City) (see CITYCODE table 07)</td>
</tr>
<tr>
<td>Educ. Result</td>
<td>MEDURSLT</td>
<td>N</td>
<td>1</td>
<td>Result of education (see RESULT table 08)</td>
</tr>
</tbody>
</table>
5. General Education

<table>
<thead>
<tr>
<th>DATA ITEM</th>
<th>ACRONYM</th>
<th>TYPE</th>
<th>LENGTH</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serial #</td>
<td>SERNO</td>
<td>C</td>
<td>6</td>
<td>Serial number, primary key</td>
</tr>
<tr>
<td>RANK</td>
<td>CEDURANK</td>
<td>N</td>
<td>2</td>
<td>Rank in education (see RANKLIST table 02)</td>
</tr>
<tr>
<td>Education Level</td>
<td>CEDLEVID</td>
<td>C</td>
<td>2</td>
<td>Educational level (see CEDLEV table 04)</td>
</tr>
<tr>
<td>Education ID</td>
<td>CEDUID</td>
<td>C</td>
<td>2</td>
<td>General education (not available)</td>
</tr>
<tr>
<td>Date start</td>
<td>CDDEDST</td>
<td>N</td>
<td>2</td>
<td>Date education start</td>
</tr>
<tr>
<td>Month start</td>
<td>CMMEDST</td>
<td>N</td>
<td>2</td>
<td>Month education start</td>
</tr>
<tr>
<td>Year start</td>
<td>CYYEDST</td>
<td>N</td>
<td>2</td>
<td>Year education start</td>
</tr>
<tr>
<td>Date end</td>
<td>CDDDED</td>
<td>N</td>
<td>2</td>
<td>Date education end</td>
</tr>
<tr>
<td>Month end</td>
<td>CMMED</td>
<td>N</td>
<td>2</td>
<td>Month education end</td>
</tr>
<tr>
<td>Year end</td>
<td>CYYEDE</td>
<td>N</td>
<td>2</td>
<td>Year education end</td>
</tr>
<tr>
<td>Duration</td>
<td>CEDUDUR</td>
<td>N</td>
<td>3</td>
<td>Duration of education (Weeks)</td>
</tr>
<tr>
<td>Place education</td>
<td>CEDUPLCE</td>
<td>C</td>
<td>3</td>
<td>Place of education (see CITYCODE table 07)</td>
</tr>
<tr>
<td>Educ. Result</td>
<td>CEDURSLT</td>
<td>N</td>
<td>1</td>
<td>Result of education (see RESULT table 08)</td>
</tr>
</tbody>
</table>

6. Occupation

<table>
<thead>
<tr>
<th>DATA ITEM</th>
<th>ACRONYM</th>
<th>TYPE</th>
<th>LENGTH</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serial #</td>
<td>SERNO</td>
<td>C</td>
<td>6</td>
<td>Serial number, primary key</td>
</tr>
<tr>
<td>Job ID</td>
<td>JOBID</td>
<td>C</td>
<td>3</td>
<td>Job code (see JOBLIST table 15)</td>
</tr>
<tr>
<td>Rank</td>
<td>JOBRANK</td>
<td>N</td>
<td>2</td>
<td>Job rank (see RANKLIST table 02)</td>
</tr>
<tr>
<td>Job date</td>
<td>JOBDD</td>
<td>C</td>
<td>2</td>
<td>Date of job</td>
</tr>
<tr>
<td>Job month</td>
<td>JOBMm</td>
<td>C</td>
<td>2</td>
<td>Month Job</td>
</tr>
<tr>
<td>Job Year</td>
<td>JOBYY</td>
<td>C</td>
<td>4</td>
<td>Year Job</td>
</tr>
<tr>
<td>Job Echelon</td>
<td>JOBECH</td>
<td>N</td>
<td>2</td>
<td>Job of echelon (see ECHELON table 14)</td>
</tr>
<tr>
<td>Order Number</td>
<td>JORNO</td>
<td>C</td>
<td>8</td>
<td>Order Number with format Number (4)/Month(2)/Year(2)</td>
</tr>
<tr>
<td>Date Number</td>
<td>JDATORNO</td>
<td>N</td>
<td>6</td>
<td>DDMYY</td>
</tr>
</tbody>
</table>
7. Rank requirement for occupation JOBRNK (Intersection)

<table>
<thead>
<tr>
<th>DATA ITEM</th>
<th>ACRONYM</th>
<th>TYPE</th>
<th>LENGTH</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Job ID</td>
<td>JOBID</td>
<td>C</td>
<td>3</td>
<td>Job code (see JOBLIST table 15)</td>
</tr>
<tr>
<td>Job rank</td>
<td>JOBRK</td>
<td>C</td>
<td>2</td>
<td>Rank requirement (see RANKLIST table 02)</td>
</tr>
</tbody>
</table>

8. Education requirement for occupation JOBEDU (Intersection)

<table>
<thead>
<tr>
<th>DATA ITEM</th>
<th>ACRONYM</th>
<th>TYPE</th>
<th>LENGTH</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Job ID</td>
<td>JOBID</td>
<td>C</td>
<td>3</td>
<td>Job code (see JOBLIST table 15)</td>
</tr>
<tr>
<td>Education req.</td>
<td>JOBED</td>
<td>C</td>
<td>2</td>
<td>Mil. education requirement (not available)</td>
</tr>
</tbody>
</table>

9. Corps requirement for occupation JOBCORP (Intersection)

<table>
<thead>
<tr>
<th>DATA ITEM</th>
<th>ACRONYM</th>
<th>TYPE</th>
<th>LENGTH</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Job ID</td>
<td>JOBID</td>
<td>C</td>
<td>3</td>
<td>Job code (see JOBLIST table 15)</td>
</tr>
<tr>
<td>Job corp</td>
<td>JOBCO</td>
<td>C</td>
<td>2</td>
<td>Corp requirement (see CORPCODE table 01)</td>
</tr>
</tbody>
</table>
### APPENDIX C

SAMPLES OF TABLE CODE

#### 01. Table of Corps Code

<table>
<thead>
<tr>
<th>DATA ITEM</th>
<th>ACRONYM</th>
<th>TYPE</th>
<th>LENGTH</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corps ID</td>
<td>CORPS</td>
<td>C</td>
<td>2</td>
<td>Corps code</td>
</tr>
<tr>
<td>Corps desc</td>
<td>CORPSDES</td>
<td>C</td>
<td>10</td>
<td>Corps name</td>
</tr>
</tbody>
</table>

01. Line
- 05. Administration
- 06. Specialist
- 07. Health
- 08. Woman

#### 02. Table of Ranks

<table>
<thead>
<tr>
<th>DATA ITEM</th>
<th>ACRONYM</th>
<th>TYPE</th>
<th>LENGTH</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rank ID</td>
<td>RANKID</td>
<td>C</td>
<td>2</td>
<td>Rank code</td>
</tr>
<tr>
<td>Description</td>
<td>RANKDES</td>
<td>C</td>
<td>20</td>
<td>Rank title</td>
</tr>
<tr>
<td>Education</td>
<td>RKEDUREQ</td>
<td>C</td>
<td>2</td>
<td>Education requirement (see RNKEDURQ table)</td>
</tr>
<tr>
<td>requirement</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Echelon</td>
<td>RKECHREQ</td>
<td>C</td>
<td>2</td>
<td>Echelon requirement (see RNKECHREQ table)</td>
</tr>
<tr>
<td>requirement</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

11. Admiral / General
12. Vice Admiral / Lieutenant General
13. Rear Admiral / Major General
14. First Admiral / Brigadier General
15. Colonel
16. Lieutenant Colonel
17. Major
18. Captain
19. First Lieutenant
20. Second Lieutenant
21. Candidate Officer

64
03. Military Education Level MEDLEV

<table>
<thead>
<tr>
<th>DATA ITEM</th>
<th>ACRONYM</th>
<th>TYPE</th>
<th>LENGTH</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Education level</td>
<td>MEDLEVEL</td>
<td>C</td>
<td>2</td>
<td>Education level</td>
</tr>
<tr>
<td>Description</td>
<td>MEDLEDES</td>
<td>C</td>
<td>30</td>
<td>Description</td>
</tr>
<tr>
<td>12 Joint Command &amp; Staff College</td>
<td></td>
<td></td>
<td></td>
<td>17 Naval Academy</td>
</tr>
<tr>
<td>13 Command and Staff College</td>
<td></td>
<td></td>
<td></td>
<td>18 Basic Officer School</td>
</tr>
<tr>
<td>14 Staff College</td>
<td></td>
<td></td>
<td></td>
<td>19 Candidate Officer School</td>
</tr>
<tr>
<td>15 2nd Off. Continuing Education</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

04. General Education Level CEDLEV

<table>
<thead>
<tr>
<th>DATA ITEM</th>
<th>ACRONYM</th>
<th>TYPE</th>
<th>LENGTH</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Education level</td>
<td>CEDLEVEL</td>
<td>C</td>
<td>2</td>
<td>Education level</td>
</tr>
<tr>
<td>Description</td>
<td>CEDUDES</td>
<td>C</td>
<td>30</td>
<td>Level of Education</td>
</tr>
<tr>
<td>11 University Level</td>
<td></td>
<td></td>
<td></td>
<td>13 Senior High School Level</td>
</tr>
<tr>
<td>12 Academy Level</td>
<td></td>
<td></td>
<td></td>
<td>14 Junior High School Level</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>15 Elementary School Level</td>
</tr>
</tbody>
</table>

05. Table of Religion Code RELIGION

<table>
<thead>
<tr>
<th>DATA ITEM</th>
<th>ACRONYM</th>
<th>TYPE</th>
<th>LENGTH</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Religion</td>
<td>RELCODE</td>
<td>N</td>
<td>1</td>
<td>Religion code</td>
</tr>
<tr>
<td>Description</td>
<td>RELDES</td>
<td>C</td>
<td>10</td>
<td>Name of Religion</td>
</tr>
<tr>
<td>1 Moslem</td>
<td></td>
<td></td>
<td></td>
<td>4 Buddhist</td>
</tr>
<tr>
<td>2 Catholic</td>
<td></td>
<td></td>
<td></td>
<td>5 Hindu</td>
</tr>
<tr>
<td>3 Protestant</td>
<td></td>
<td></td>
<td></td>
<td>6 Other</td>
</tr>
</tbody>
</table>
### Table of Sex Code

<table>
<thead>
<tr>
<th>DATA ITEM</th>
<th>ACRONYM</th>
<th>TYPE</th>
<th>LENGTH</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td>SEX</td>
<td>N</td>
<td>1</td>
<td>Sex Code</td>
</tr>
<tr>
<td>Sex</td>
<td>SEXDES</td>
<td>C</td>
<td>6</td>
<td>Sex Code</td>
</tr>
<tr>
<td>1 Male</td>
<td></td>
<td></td>
<td></td>
<td>2 Female</td>
</tr>
</tbody>
</table>

### Table of City Code

<table>
<thead>
<tr>
<th>DATA ITEM</th>
<th>ACRONYM</th>
<th>TYPE</th>
<th>LENGTH</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>City code</td>
<td>CITYCODE</td>
<td>N</td>
<td>3</td>
<td>City code</td>
</tr>
<tr>
<td>Description</td>
<td>CITYDES</td>
<td>C</td>
<td>20</td>
<td>The name of City</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>City code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>101 Jakarta</td>
<td>201 Tokyo</td>
</tr>
<tr>
<td>102 Bandung</td>
<td>201 Bangkok</td>
</tr>
<tr>
<td>103 Bogor</td>
<td>203 Singapore</td>
</tr>
<tr>
<td>104 Semarang</td>
<td>203 Manila</td>
</tr>
<tr>
<td>105 Jogjakarta</td>
<td>214 Paris</td>
</tr>
<tr>
<td>106 Surakarta</td>
<td>215 London</td>
</tr>
<tr>
<td>107 Magelang</td>
<td>301 San Francisco</td>
</tr>
<tr>
<td>108 Surabaya</td>
<td>302 San Diego</td>
</tr>
<tr>
<td>109 Malang</td>
<td>303 Monterey</td>
</tr>
<tr>
<td>110 Madiun</td>
<td>304 Washington DC</td>
</tr>
<tr>
<td>111 Medan</td>
<td>305 Quantico</td>
</tr>
<tr>
<td>112 Ujungpandang</td>
<td>306 Newport</td>
</tr>
<tr>
<td>113 Denpasar</td>
<td>307 Lackland</td>
</tr>
<tr>
<td></td>
<td>etc.</td>
</tr>
</tbody>
</table>

### Table of Education Result

<table>
<thead>
<tr>
<th>DATA ITEM</th>
<th>ACRONYM</th>
<th>TYPE</th>
<th>LENGTH</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Result code</td>
<td>RESCODE</td>
<td>N</td>
<td>1</td>
<td>Education result code</td>
</tr>
<tr>
<td>Description</td>
<td>RESDES</td>
<td>C</td>
<td>25</td>
<td>Result of education</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Result code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Graduate</td>
<td>3 Incomplete</td>
</tr>
<tr>
<td>2 Certificate of Completion</td>
<td></td>
</tr>
</tbody>
</table>
### Table of Skin Color

<table>
<thead>
<tr>
<th>DATA ITEM</th>
<th>ACRONYM</th>
<th>TYPE</th>
<th>LENGTH</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skin code</td>
<td>SKINCODE</td>
<td>N</td>
<td>1</td>
<td>Skin color code</td>
</tr>
<tr>
<td>Description</td>
<td>SKINDES</td>
<td>C</td>
<td>6</td>
<td>Skin color description</td>
</tr>
<tr>
<td>1 Brown</td>
<td></td>
<td></td>
<td></td>
<td>3 White</td>
</tr>
<tr>
<td>2 Black</td>
<td></td>
<td></td>
<td></td>
<td>4 Yellow</td>
</tr>
</tbody>
</table>

### Table of Hair Type

<table>
<thead>
<tr>
<th>DATA ITEM</th>
<th>ACRONYM</th>
<th>TYPE</th>
<th>LENGTH</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hair code</td>
<td>HAIRCODE</td>
<td>N</td>
<td>1</td>
<td>Hair code</td>
</tr>
<tr>
<td>Description</td>
<td>HAIRSDES</td>
<td>C</td>
<td>15</td>
<td>Hair description</td>
</tr>
<tr>
<td>1 Curly</td>
<td></td>
<td></td>
<td></td>
<td>3 Straight stiff</td>
</tr>
<tr>
<td>2 Wavy</td>
<td></td>
<td></td>
<td></td>
<td>4 Straight limp</td>
</tr>
</tbody>
</table>

### Table of Eye Color

<table>
<thead>
<tr>
<th>DATA ITEM</th>
<th>ACRONYM</th>
<th>TYPE</th>
<th>LENGTH</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eye code</td>
<td>EYECODE</td>
<td>N</td>
<td>1</td>
<td>Eye color code</td>
</tr>
<tr>
<td>Description</td>
<td>EYEDES</td>
<td>C</td>
<td>5</td>
<td>Eye color</td>
</tr>
<tr>
<td>1 Black</td>
<td></td>
<td></td>
<td></td>
<td>3 Brown</td>
</tr>
<tr>
<td>2 Blue</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Table of Blood Types

<table>
<thead>
<tr>
<th>DATA ITEM</th>
<th>ACRONYM</th>
<th>TYPE</th>
<th>LENGTH</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blood code</td>
<td>BLOODCOD</td>
<td>N</td>
<td>1</td>
<td>Blood code</td>
</tr>
<tr>
<td>Description</td>
<td>BLOODDES</td>
<td>C</td>
<td>2</td>
<td>Blood description</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Blood Types</th>
<th>LENGTH</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 A+</td>
<td>5</td>
<td>AB+</td>
</tr>
<tr>
<td>2 A-</td>
<td>6</td>
<td>AB-</td>
</tr>
<tr>
<td>3 B+</td>
<td>7</td>
<td>O+</td>
</tr>
<tr>
<td>4 B-</td>
<td>8</td>
<td>O-</td>
</tr>
</tbody>
</table>

### Table of Uniform Size

<table>
<thead>
<tr>
<th>DATA ITEM</th>
<th>ACRONYM</th>
<th>TYPE</th>
<th>LENGTH</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uniform code</td>
<td>UNICODE</td>
<td>N</td>
<td>1</td>
<td>Uniform code</td>
</tr>
<tr>
<td>Description</td>
<td>UNIDES</td>
<td>C</td>
<td>6</td>
<td>Uniform description</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Uniform Sizes</th>
<th>LENGTH</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Small</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 Medium</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 Large</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Table of Echelon Code

<table>
<thead>
<tr>
<th>DATA ITEM</th>
<th>ACRONYM</th>
<th>TYPE</th>
<th>LENGTH</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Echelon code</td>
<td>ECHCODE</td>
<td>C</td>
<td>2</td>
<td>Echelon code</td>
</tr>
<tr>
<td>Description</td>
<td>ECHDES</td>
<td>C</td>
<td>11</td>
<td>Echelon description</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Echelon Codes</th>
<th>LENGTH</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>11 Echelon 1-A</td>
<td>23</td>
<td>Echelon 2-C</td>
</tr>
<tr>
<td>12 Echelon 1-B</td>
<td>24</td>
<td>Echelon 2-D</td>
</tr>
<tr>
<td>13 Echelon 1-C</td>
<td>25</td>
<td>Echelon 2-E</td>
</tr>
<tr>
<td>14 Echelon 1-D</td>
<td>26</td>
<td>Echelon 2-F</td>
</tr>
<tr>
<td>15 Echelon 1-E</td>
<td>31</td>
<td>Echelon 3-A</td>
</tr>
<tr>
<td>16 Echelon 1-F</td>
<td>32</td>
<td>Echelon 3-B</td>
</tr>
<tr>
<td>17 Echelon 1-G</td>
<td>33</td>
<td>Echelon 3-C</td>
</tr>
<tr>
<td>18 Echelon 1-H</td>
<td>34</td>
<td>Echelon 3-D</td>
</tr>
<tr>
<td>21 Echelon 2-A</td>
<td>35</td>
<td>Echelon 3-E</td>
</tr>
<tr>
<td>22 Echelon 2-B</td>
<td>41</td>
<td>Functional</td>
</tr>
</tbody>
</table>
## 15. Occupation list

### JOBLIST

<table>
<thead>
<tr>
<th>DATA ITEM</th>
<th>ACRONYM</th>
<th>TYPE</th>
<th>LENGTH</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Job ID</td>
<td>JOBID</td>
<td>C</td>
<td>3</td>
<td>Job code</td>
</tr>
<tr>
<td>Job Descript</td>
<td>JOBDES</td>
<td>C</td>
<td>30</td>
<td>Name of Job</td>
</tr>
<tr>
<td>Echelon</td>
<td>ECHELON</td>
<td>C</td>
<td>2</td>
<td>Job echelon (see ECHELON table 14)</td>
</tr>
<tr>
<td>Station</td>
<td>JOBSTAT</td>
<td>C</td>
<td>2</td>
<td>Station</td>
</tr>
</tbody>
</table>
APPENDIX D
EXAMPLES OF PROGRAM

********************************************************************************
* PROGRAM NAME : PERS.PRG
* AUTHOR : DJOKO M. ARiyADI
* DATE WRITTEN : MAY, 1986
* PURPOSE : THIS IS THE MAIN MENU PROGRAM FOR THE
* OFFICER SYSTEM
* PROGRAMS CALLED BY THIS PROGRAM ARE :
* ADDMENU.PRG DELMENU.PRG
* CHGMENU.PRG PRNMENU.PRG
* QUEMENU.PRG
* NO FILES DBF ARE USED.
********************************************************************************

SET COLOR TO 30, 14
SET TALK OFF
SET CONSOLE ON
ERASE
STORE ' ' TO PASS
@ 8, 22 SAY ' WELCOME TO THE NAVY OFFICER PERSONNEL SYSTEM. '
@ 12, 22 SAY ' ENTER YOUR PASSWORD PLEASE '
SET CONSOLE OFF
ACCEPT TO PASS
STORE !(PASS) TO PASS
SET CONSOLE ON
IF TRIM(PASS) <> 'PERS'
@ 15, 10 SAY 'YOU TYPED THE WRONG PASSWORD, TRY AGAIN FROM THE:
BEGINNING'
@ 17, 25 SAY 'QUIT TO DBASE II !!'
CANCEL
ENDIF
RELEASE PASS
DO WHILE T
STORE " " TO ANSWER
SET TALK OFF
ERASE
? " "
@ 2, 1 SAY "OFFICER MAIN MENU :
MAY 1986"
SET COLOR TO 4
? "=============================================================================
? " "
? " "
? " A --> ADD RECORD*

70
? " " D ---> DELETE RECORD"
? " " C ---> CHANGE RECORD"
? " " P ---> PRINT"
? " " Q ---> QUERY INFORMATION "
? " " R ---> RETURN TO DATABASE"
? " " S ---> RETURN TO DOS"
? " "
?"=============================================================================

@ 23,16 SAY "SELECT AN ACTION BY LETTER.========> " GET ANSWER;
PICTURE"!

@ 23,16 SAY CHR (7)
READ
DO..CASE
   CASE ANSWER = 'A'
      DO ADDMENU
   CASE ANSWER = 'D'
      DO DELMENU
   CASE ANSWER = 'C'
      DO CHGMENU
   CASE ANSWER = 'P'
      DO PRNMENU
   CASE ANSWER = 'Q'
      DO QUEMENU
   CASE ANSWER = 'R'
      CANCEL
   CASE ANSWER = 'S'
      DO QUIT
   OTHERWISE
      DO ERROR
ENDCASE
ENDDO
ERASE
RETURN
PROGRAM NAME : ADDMENU.PRG

AUTHOR : DJOKO M. ARHYADI

DATE WRITTEN : MAY, 1986

PURPOSE : TO PRESENT THE ADDITION MENU

PROGRAMS CALLED BY THIS PROGRAM ARE :

ADDOFF.PRG  ADDRANK.PRG  ADDCORPS.PRG  ADDRCODE.PRG

ADJOB.PRG  ADDJCODE.PRG  ADDEDU.PRG  ADDEDCODE.PRG

LOCAL VARIABLE USED : ANSWER

NO FILES DBF ARE USED.

*------------------------------------------*
CLEAR
ERASE

DO WHILE T
STORE * " TO ANSWER
SET TALK OFF
ERASE
? "
@ 2,1 SAY "ADDITION MENU MAY 1986"
set color to 4
? "=========================================================================

? "
? " RECORD ADDITION OPTION"
? " O --> OFFICER ADDITION K --> JOB;
ADDITION"
? " C --> CORPS ADDITION L --> JOB;
CODE ADDITION 
? " E --> EDUCATION ADDITION R --> RANK;
ADDITION 
? " F --> EDUCATION CODE ADDITION S --> RANK;
CODE ADDITION"
? "
? "
? " TYPE RETURN KEY, RETURN TO MENU"
? "=========================================================================

@ 23,16 SAY "SELECT AN ACTION BY LETTER. =====> " GET ANSWER;
PICTURE "1"
@ 23,16 SAY CHR (7)
READ
DO CASE
   CASE ANSWER = ' "

72
RETURN
CASE ANSWER = 'O'
   DO ADDOFF
CASE ANSWER = 'C'
   DO ADDCORPS
CASE ANSWER = 'E'
   DO ADDEDU
CASE ANSWER = 'F'
   DO ADDCEDU
CASE ANSWER = 'K'
   DO ADDJOB
CASE ANSWER = 'L'
   DO ADDCJOB
CASE ANSWER = 'R'
   DO ADDRANK
CASE ANSWER = 'S'
   DO ADDCRANK
OTHERWISE
   DO ERROR
ENDCASE
ENDDO
ERASE
RETURN
PROGRAM NAME : DELMENU.PRG
AUTHOR : DJOKO M. ARiyADI
DATE WRITTEN : MAY, 1986
PURPOSE : TO PRESENT THE DELETE MENU
PROGRAMS CALLED BY THIS PROGRAM ARE :
DELOFF.PRG DELRANK.PRG DELCORPS.PRG DELRCODE.PRG
DEJOB.PRG DELEDU.PRG DELCJOB.PRG DELECODE.PRG
LOCAL VARIABLE USED : ANSWER
NO FILES DBF ARE USED.

CLEAR
ERASE
DO WHILE T
STORE " " TO ANSWER
SET TALK OFF
ERASE
? " 
@ 2,1 SAY "DELETION MENU"
MAY 1986"
SET COLOR TO 4
? "="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="="=self
CASE ANSWER = ''
RETURN
CASE ANSWER = 'O'
  DO DELOFF
CASE ANSWER = 'C'
  DO DELCORPS
CASE ANSWER = 'E'
  DO DELEDU
CASE ANSWER = 'F'
  DO DELCEDU
CASE ANSWER = 'K'
  DO DELCREDU
CASE ANSWER = 'L'
  DO DELJOB
CASE ANSWER = 'R'
  DO DELECRANK
CASE ANSWER = 'S'
  DO DELECRANK
OTHERWISE
  DO ERROR
ENDCASE
ENDDQ.
ERASE
RETURN
* PROGRAM NAME : CHGMENU.PRG
* AUTHOR : DJOKO M. ARHYADI
* DATE WRITTEN : MAY, 1986
* PURPOSE : TO PRESENT THE CHANGE MENU
* PROGRAMS CALLED BY THIS PROGRAM ARE :
  * CHGOFF.PRG  CHGRANK.PRG  CHGCORPS.PRG  CHGRCODE.PRG
  * CHGJOB.PRG  CHGJCODE.PRG  CHGECODE.PRG  CHGEDU.PRG
* LOCAL VARIABLE USED : ANSWER
* NO FILES DBF ARE USED.

CLEAR
ERASE
DO WHILE T
STORE " " TO ANSWER
SET TALK OFF
ERASE
? "
@ 2,1 SAY "CHANGE MENU
      MAY 1986"
SET COLOR TO 4
? "="
RECORD CHANGE OPTION"
? 
? 
? 
? 
? 
O --> CHANGE OFFICER
JOB
? 
? 
C --> CHANGE CORPS
JOB CODE
? 
? 
E --> CHANGE EDUCATION
RANK
? 
? 
F --> CHANGE EDUCATION CODE
RANK CODE
? 
? 
? "="
TYPE RETURN KEY, RETURN TO MENU"
?="

@ 23,16 SAY "SELECT AN ACTION BY LETTER. ======> " GET ANSWER;
PATTERN "!

@ 23,16 SAY CHR (7)
READ
DO CASE
CASE ANSWER = ''
RETURN
CASE ANSWER = 'O'
DO CHGOFF
CASE ANSWER = 'C'
DO CHGCORPS
CASE ANSWER = 'E'
DO CHGEDU
CASE ANSWER = 'F'
DO CHGCEDU
CASE ANSWER = 'K'
DO CHGJOB
CASE ANSWER = 'L'
DO CHGCJOB
CASE ANSWER = 'R'
DO CHGRANK
CASE ANSWER = 'S'
DO CHGCRANK
OTHERWISE
DO ERROR
ENDCASE
ENDDO
ERASE
RETURN
PROGRAM NAME: QUEMENU.PRG
AUTHOR: DJOKO M. ARiyADI
DATE WRITTEN: MAY, 1986
PURPOSE: TO PROVIDE QUERY MENU SELECTION
PROGRAMS CALLED BY THIS PROGRAM ARE:	
QUERYA, QUERYB, QUERYC, QUERYD, QUERYE.PRG
LOCAL VARIABLE USED: ANSWER
NO FILES DBF ARE USED.

CLEAR
ERASE
DO WHILE T
STORE " " TO ANSWER
SET TALK OFF
ERASE
? " "
@ 2,1 SAY "QUERY MENU"
MAY 1986"
SET COLOR TO 4
? "="

========= QUERY OPTIONS ==========

A ----> PROVIDE MIL. EDUCATION LEVEL:
INFORMATION
B ----> PROVIDE ANY MIL. EDUCATION:
INFORMATION
C ----> PROVIDE RANK HISTORY INFORMATION
D ----> PROVIDE JOB HISTORY INFORMATION
E ----> PROVIDE JOB ELIGIBLE INFORMATION

TYPE RETURN KEY, RETURN TO MENU"

@ 23,16 SAY "SELECT AN ACTION BY LETTER. =======> " GET ANSWER;
PICTURE "!"

@ 23,16 SAY CHR (7)
READ
DO CASE
CASE ANSWER = '
RETURN

78
CASE ANSWER = 'A'
DO QUERYA
CASE ANSWER = 'B'
DO QUERYB
CASE ANSWER = 'C'
DO QUERYC
CASE ANSWER = 'D'
DO QUERYD
CASE ANSWER = 'E'
DO QUERYE
OTHERWISE
DO ERROR
ENDCASE
ENDDO
ERASE
RETURN
* PROGRAM NAME : PRNMENU.PRG
* AUTHOR : DJOKO M. ARiyADI
* DATE WRITTEN : MAY, 1986
* PURPOSE : TO PROVIDE PRINT MENU SELECTION
* PROGRAMS CALLED BY THIS PROGRAM ARE :
* PROFMENU, PRRKMENU, PRJOMENU.PRG
* LOCAL VARIABLE USED : ANSWER
* NO FILES DBF ARE USED.

ERASE
DO WHILE T
   STORE " " TO ANSWER
   SET TALK OFF
   ERASE
   ? "
   @ 2,1 SAY "PRINT MENU :
       MAY 1986"
   SET COLOR TO 4
   ? "==========================================================================
   "
   ? "PRINT MENU OPTIONS "
   ? "P --- OFFICER RECORD"
   ? "R --- RANK CODE RECORD"
   ? "J --- JOB CODE RECORD"
   ? "TYPE RETURN KEY, RETURN TO MENU"
   ? "==========================================================================

@ 23,16 SAY "SELECT AN ACTION BY LETTER.=====> " GET ANSWER:
PICTURE ".!

@ 23,16 SAY CHR (7)
READ
DO CASE
   CASE ANSWER = ' ' RETURN
   CASE ANSWER = 'P' DO PROFMENU
CASE ANSWER = 'R'
  DO PRRKMENU
CASE ANSWER = 'J'
  DO PRJOMENU
OTHERWISE
  DO ERROR
ENDCASE
ENDDO
ERASE
RETURN
**PROGRAM NAME :** PROFMENU.PRG

**AUTHOR :** DJOKO M. ARIYADI

**DATE WRITTEN :** MAY, 1986

**PURPOSE :** TO PROVIDE OFFICER PRINT MENU PROGRAM

**PROGRAMS CALLED BY THIS PROGRAM ARE :**

* PERSNAME.FRM, PERSERNO.FRM, PERSRANK.FRM, PERSRKSNS.FRM

**LOCAL VARIABLE USED :** ANSWER, ANSW

**NO FILES DBF ARE USED.**

***********

CLEAR
SET TALK OFF
SET COLOR TO 20,5
DO WHILE T

ERASE
@
2,1 SAY 'PRINT OFFICERS OPTION':
MAY 1986'
.SET COLOR TO 4
@

PRINT OFFICERS LIST OPTION

N --- > LIST BY NAME
R --- > LIST BY RANK
S --- > LIST BY SERIAL #

TYPE RETURN KEY, RETURN TO MENU'

SET COLOR TO 4
@

STORE ' ' TO ANSWER
@
23,16 SAY "SELECT AN ACTION BY LETTER ===> " GET;

ANSWER PICTURE "!"

READ

DO CASE

CASE ANSWER = ' ' RETURN

CASE ANSWER = 'N'
DO PROFNAME

CASE ANSWER = 'R'
DO PROFRANK

CASE ANSWER = 'S'
DO PROFSERN

***********
OTHERWISE
   DO ERROR
   ENDCASE
ENDDO
ERASE
RETURN
* PROGRAM NAME: PROFRANK.PRG
* AUTHOR: DJOKO M. ARIYACI
* DATE WRITTEN: MAY, 1986
* PURPOSE: TO PRINT OFFICER'S LISTING BY RANK
* PROGRAMS CALLED BY THIS PROGRAM ARE:
  * PERSRANK.FRM
  * LOCAL VARIABLE USED: Q:PRS
  * DBF FILE USED ARE: OFFICER, RANKLIST

ERASE
CLEAR
SET TALK OFF
SET COLOR TO 20,5
STORE T TO Q:FLAG1
DO WHILE Q:FLAG1
  USE OFFICER
  @ 12,20 SAY "BE PATIENT PLEASE, STILL PROCESSING"
  INDEX ON RANKID TO TF1
  SELECT PRIMARY
  USE OFFICER INDEX TF1
  SELECT SECONDARY
  USE RANKLIST
  JOIN TO OFFRANK FOR P.RANKID=S.RANKID FIELDS P.SERNO, P.NAME, P.RANKDE
  USE OFFRANK
  ERASE
  STORE T TO Q:FLAG2
  DO WHILE Q:FLAG2
    ERASE
    @ 8,15 SAY 'DO YOU WANT THIS LIST ON THE SCREEN or:
    'PRINTER?
    ? "
    ACCEPT "
    ENTER 's' for SCREEN or 'h' for:
    HARDCOPY" TO Q:PRS
    READ
    DO CASE
      CASE Q:PRS = 's'
        ERASE
        REPORT FORM PERSRANK
        STORE F TO Q:FLAG1
        STORE F TO Q:FLAG2
      CASE Q:PRS = 'h'
        ERASE
        REPORT FORM PERSRANK TO PRINT
        STORE F TO Q:FLAG1
        STORE F TO Q:FLAG2
      OTHERWISE
        STORE F TO Q:FLAG1

84
DO ERROR 
ERASE 
LOOP 
ENDCASE 
ENDDO 
SET COLOR TO 4 
? " " 
? " 
SET CONSOLE OFF 
WAIT 
SET CONSOLE ON 
ENDDO 
RETURN 

* TYPE ANY KEY TO CONTINUE *
**PROGRAM NAME : PROFNAME.PRG**
**AUTHOR : DJOKO M. ARiyADI**
**DATE WRITTEN : MAY , 1986**
**PURPOSE : TO PRINT OFFICER'S LISTING BY NAME**
**PROGRAMS CALLED BY THIS PROGRAM ARE :**
**PERSNAME.FRM**
**LOCAL VARIABLE USED : Q:PRS**
**DBF FILE USED ARE : OFFICER, RANKLIST**

```
ERASE
CLEAR
SET TALK OFF
SET COLOR TC 20,5
STORE T TO Q:FLAG1
DO WHILE Q:FLAG1
  USE OFFICER
  @ 12,20 SAY "BE PATIENT PLEASE, STILL PROCESSING"
  INDEX ON NAME TO TF1

  SELECT PRIMARY
  USE OFFICER INDEX TF1
  SELECT SECONDARY
  USE RANKLIST
  JOIN TO OFFRANK FOR P.RANKID=S.RANKID FIELDS P.SERNO, P.NAME,
  RANKDES

  USE OFFRANK
  ERASE
  STORE T TO Q:FLAG2
  DO WHILE Q:FLAG2
    ERASE
    @ 8,15 SAY 'DO YOU WANT THIS LIST ON THE SCREEN or PRINTER?'
    ? 7    ACCEPT "ENTER 's' for SCREEN or 'h' for;
    HARDCOPY" to Q:PRS
    READ
    DO CASE
      CASE Q:PRS = 's'
        ERASE
        REPORT FORM PERSNAME
        STORE F TO Q:FLAG1
        STORE F TO Q:FLAG2
      CASE Q:PRS = 'h'
        ERASE
        REPORT FORM PERSNAME TO PRINT
        STORE F TO Q:FLAG1
        STORE F TO Q:FLAG2
      OTHERWISE
        STORE F TO Q:FLAG1
        DO ERROR

86```
ERASE
LOOP
ENDCASE
ENDDO
SET COLOR TO 4
? ""
? ""
SET CONSOLE OFF
WAIT
SET CONSOLE ON
ENDDO
RETURN

**TYPE ANY KEY TO CONTINUE**
Program Name: PROFSERN.PRG
Author: DJOKO M. ARIOYADI
Date Written: MAY, 1986
Purpose: TO PRINT OFFICER'S LISTING BY SERIAL NUMBER
Programs Called By This Program Are:
    PERSERNO.FRM
Local Variable Used: Q:PRS
DBF File Used Are: OFFICER, RANKLIST

ERASE
CLEAR
SET TALK OFF
SET COLOR TO 20,5
STORE T TO Q:FLAG1
DO WHILE Q:FLAG1
    USE OFFICER
    @ 12,20 SAY "BE PATIENT PLEASE, STILL PROCESSING"

INDEX ON SERNO TO TF1

SELECT PRIMARY
USE OFFICER INDEX TF1
SELECT SECONDARY
USE RANKLIST
JOIN TO OFFRANK FOR P.RANKID=S.RANKID FIELDS P.SERNO,P.NAME,RANKDES

USE OFFRANK
ERASE
STORE T TO Q:FLAG2
DO WHILE Q:FLAG2
    ERASE
    @ 8,15 SAY 'DO YOU WANT THIS LIST ON THE SCREEN or PRINTER?'
    ? " "
    ACCEPT " " ENTER 's' for SCREEN or 'n' for HARDCOPY" to Q:PRS
READ
DO CASE
CASE Q:PRS = 's'
    ERASE
    REPORT FORM PERSERNO
    STORE F TO Q:FLAG1
    STORE F TO Q:FLAG2
CASE Q:PRS = 'h'
    ERASE
    REPORT FORM PERSERNO TO PRINT
    STORE F TO Q:FLAG1
    STORE F TO Q:FLAG2
OTHERWISE
    STORE F TO Q:FLAG1

88
DO ERROR
ERASE
LOOP
ENDCASE
ENDDO
SET COLOR TO 4
? " "
? "
SET CONSOLE OFF
WAIT
SET CONSOLE ON
ENDDO
RETURN
---

**Program Name:** DELOFF.PRG

**Author:** DJOKO M. ARYADI

**Date Written:** MAY, 1986

**Purpose:** TO DELETE OFFICER RECORD

**Programs Called by This Program Are:**

**DBF Files Used Are:** OFFICER

---

```
SET TALK OFF
SET CONSOLE ON
ERASE
STORE t TO flag
DO WHILE t
  SET COLOR TO 30,14
  USE OFFICER
  INDEX ON SERNO TO DELOFF
  USE OFFICER INDEX DELOFF
  STORE ' ' TO man
  ERASE
  @ 5,23 SAY 'TO DELETE OFFICER RECORD'
  @ 10,23 SAY 'ENTER SERIAL NUMBER ' GET msn PICTURE '99999'
  @ 12,23 SAY 'e.g : 005001; 006005; 007001'
  @ 16,23 SAY 'ENTER A BLANK, RETURN TO DELETE MENU'
  READ
    if msn = ''
      RELEASE msn,flag
      RETURN
    endif
    FIND &msn
  IF # = 0
    SET COLOR TO 112,140
    @ 12,20 SAY 'SERIAL NUMBER NOT ON THIS PERSON RECORDS'
    @ 13,40 SAY CHR(7)
    SET TALK OFF
    STORE 1 TO v
    DO WHILE v<200
      STORE v+1 TO v
    ENDDO
    STORE v+1 TO v
    LOOP
  ENDF  # = 0
  ERASE
  STORE ' ' TO mname
  STORE ' ' to mcorp
  STORE 0 to mrankid
  STORE ' ' to meduid
  STORE ' ' to msex
  STORE ' ' to mbirthdd
  STORE ' ' to mbirthmm
```
STORE ' ' to mbirthyy
STORE ' ' to mbirthp
STORE ' ' to mreligion

STORE serno to msn
STORE name to mname
STORE corps to mcorps
STORE rankid to mrankid
STORE eduid to meduid
STORE sex to msex
STORE birthdd to mbirthdd
STORE birthmm to mbirthmm
STORE birthyy to mbirthyy
STORE birthp to mbirthp
STORE religion to mreligion

@ 4,20 say ' THIS IS THE DATA YOU WANT TO DELETE'
@ 7,23 SAY 'SERIAL #' 'msn
@ 8,23 SAY 'NAME' 'GET mname
@ 9,23 SAY 'CORPS' 'GET mcorps
@ 10,23 SAY 'RANK' 'GET mrankid
@ 11,23 SAY 'MIL. EDUCATION' 'GET meduid
@ 12,23 SAY 'SEX' 'GET msex
@ 13,23 SAY 'BIRTH DAY' 'GET mbirthdd
@ 14,23 SAY 'BIRTH MONTH' 'GET mbirthmm
@ 15,23 SAY 'BIRTH YEAR' 'GET mbirthyy
@ 16,23 SAY 'BIRTH PLACE' 'GET mbirthp
@ 17,23 SAY 'RELIGION' 'GET mreligion

STORE ' ' TO answer
@ 19,20 SAY ' ARE YOU SURE TO DELETE THIS DATA ?'
@ 21,16 SAY ' TYPE y FOR yes OR n RETURN TO SERIAL #:
OPTION'
@ 21,65 GET answer
READ
DO CASE
CASE (answer) = 'y'
DEDELETE
PACK
CLEAR
STORE t TO flag
CASE (answer) = 'n'
STORE t TO flag
OTHERWISE
DO ERROR
ENDCASE
ENDDO WHILE t
USE OFFICER
INDEX ON SERNO TO DELOFF
ERASE
RETURN
PROGRAM NAME: CHGOFF.PRG
AUTHOR: DJOKO M. ARIYAD
DATE WRITTEN: MAY, 1986
PURPOSE: TO CHANGE OFFICER RECORDS
PROGRAMS CALLED BY THIS PROGRAM ARE:
DBF FILES USED ARE: OFFICER

SET TALK OFF
SET CONSOLE ON
ERASE

USE OFFICER
INDEX ON SERNO TO CHGOFF
USE OFFICER INDEX CHGOFF

STORE t TO flag
DO WHILE t
   SET COLOR TO 30,14
   STORE ' ' TO man
   ERASE
   @ 5,23 SAY 'TO CHANGE OFFICER RECORDS'
   @ 10,23 SAY 'ENTER SERIAL NUMBER ' GET msn .PICTURE '9999'
   @ 12,23 SAY 'E.g.: 005001; 006005; 007001'
   @ 16,23 SAY 'ENTER A BLANK RETURN TO CHANGE MENU'
   READ
   IF msn = '
      RELEASE msn,flag
      RETURN
   ENDIF
   FIND &msn
   IF # = 0
      SET COLOR TO 112,140
      @ 12,20 SAY 'SERIAL NUMBER NOT ON THIS OFFICER RECORDS'
      @ 13,40 SAY CHR(7)
      SET TALK OFF
      STORE 1 TO v
      DO WHILE v<200
         STORE v+1 TO v
      ENDDO WHILE v<235
      SET COLOR TO 30,14
      LOOP
   ENDIF # = 0
   ERASE
   * load old values
   STORE name TO mname
   STORE corps TO mcorps
   STORE rankid TO mrankid
   STORE eduid TO meduid
   STORE sex TO msex
   STORE birthdd TO mbirthdd

92
STORE birthmm TO mbirthmm
STORE birthyy TO mbirthyy
STORE birthp TO mbirthp
STORE religion TO mreligion

* get new values
@ 4,20 SAY 'THIS IS THE DATA YOU WANT TO CHANGE'
@ 7,23 SAY 'SERIAL NUMBER' 'msn
@ 8,23 SAY 'NAME' 'mname
@ 9,23 SAY 'CORPS' 'mcorps
@ 10,23 SAY 'RANK' 'mrankid
@ 11,23 SAY 'MIL. EDUCATION' 'meduid
@ 12,23 SAY 'SEX' 'msex
@ 13,23 SAY 'BIRTH DATE' 'mbirthdd
@ 14,23 SAY 'BIRTH MONTH' 'mbirthmm
@ 15,23 SAY 'BIRTH YEAR' 'mbirthyy
@ 16,23 SAY 'BIRTH PLACE' 'mbirthp
@ 17,23 SAY 'RELIGION' 'mreligion

STORE 'y' TO answer
@ 20,20 SAY 'ARE YOU SURE TO CHANGE THIS DATA ?'
@ 22,16 SAY 'TYPE y FOR yes OR n RETURN TO SERIAL # OPTION'
@ 22,65 GET answer
READ
DO CASE
* replace values
CASE (answer) = 'y'
  REPLACE name WITH mname, corps WITH mcorps, rankid;
  WITH mrankid
  REPLACE eduid WITH meduid, sex WITH msex, birthdd;
  WITH mbirthdd
  REPLACE birthmm WITH mbirthmm, birthyy WITH mbirthyy
  REPLACE birthp WITH mbirthp, religion WITH mreligion
  STORE t to flag
CASE (answer) = 'n'
  STORE t TO flag
OTHERWISE
  DO ERROR
ENDCASE
ENDDO WHILE t
USE OFFICER
INDEX ON SERNO TO CHGOFF
ERASE
RETURN
SET TALK OFF
SET CONSOLE ON
ERASE
USE OFFICER
INDEX ON SERNO TO ADDOFF
USE OFFICER INDEX ADDOFF
STORE t TO flag
DO WHILE T
SET COLOR TO 30,14
STORE ' ' TO msn
ERASE
@ 5,20 SAY 'ADDITION TO OFFICER RECORDS'
@ 10,18 SAY 'ENTER SERIAL NUMBER' GET msn PICTURE;
'999999'
@ 12,18 SAY 'e.g : 005004; 007002; 009001'
@ 16,16 SAY 'ENTER A BLANK TO RETURN TO ADDITION MENU'
READ
IF msn = ' '
RELEASE msn,flag
RETURN
ENDIF
FIND &msn
IF #<>0
SET COLOR TO 112,140
@ 12,10 SAY 'THIS SERIAL # IS ALREADY ON FILE'
@ 13,40 SAY CHR(7)
SET TALK OFF
STORE 1 TO v
DO WHILE v<200
STORE v+1 TO v
ENDDO WHILE v<250
SET COLOR TO 30,14
LOOP
ENDIF #<>0
ERASE
@ 4,23 SAY 'ADDING TO OFFICER RECORD'
STORE ' ' TO mname
STORE ' ' TO mcorps
STORE 0 TO mrankid
STORE ' ' TO meduid
STORE ' ' TO msex
STORE ' ' TO mbirthdd
STORE ' ' TO mbirthmm
STORE ' ' TO mbirthyy
STORE ' ' TO mreligion
STORE ' ' TO mbirthp

@ 7,23 SAY 'SERIAL NUMBER ' + msn
@ 8,23 SAY 'NAME ' GET mname
@ 9,23 SAY 'CORPS ' GET mcorps
@ 10,23 SAY 'RANK ' GET mrankid
@ 11,23 SAY 'MIL. EDUCATION ' GET meduid
@ 12,23 SAY 'SEX ' GET msex
@ 13,23 SAY 'BIRTH DAY ' GET mbirthdd
@ 14,23 SAY 'BIRTH MONTH ' GET mbirthmm
@ 15,23 SAY 'BIRTH YEAR ' GET mbirthyy
@ 16,23 SAY 'BIRTH PLACE ' GET mbirthp
@ 17,23 SAY 'RELIGION ' GET mreligion

@ 20,10 SAY 'HIT ENTER TO RETURN TO OFFICER MENU OPTION;

READ

IF mname = '
    LOOP
ENDIF

* add the record
APPEND BLANK
REPLACE serno WITH msn ,name WITH mname ,corps WITH mcorps
REPLACE rankid WITH mrankid,eduid WITH meduid,sex:
    WITH msex
    REPLACE birthdd WITH mbirthdd ,birthmm WITH mbirthmm
    REPLACE birthyy WITH mbirthyy ,birthp WITH mbirthp
    REPLACE religion WITH mreligion
ENDDO WHILE t
USE OFFICER
INDEX ON Serno TO ADDOFF
ERASE
RETURN
* PROGRAM NAME : QUERYA.PRG
* AUTHOR : DJOKO M. ARiyADI
* DATE WRITTEN : MAY, 1986
* PURPOSE : TO LIST OFFICERS WHO HAVE ACHIEVED A GIVEN MILITARY EDUCATION LEVEL
* PROGRAMS CALLED BY THIS PROGRAM ARE :
* DBF FILES USED ARE : MILEDU, MEDULIST, OFFICER, CORPS, RANK

SET TALK OFF
ERASE
SET CONSOLE ON
STORE T TO FLAG
SET COLOR TO 30, 14
STORE T TO Q:FLAG
DO WHILE Q:FLAG
ERASE
? *
@ 2, 1 SAY "QUERY MILITARY EDUCATION LEVEL:
MAY 1986"
SET COLOR TO 4
? "==================================================================
SET COLOR TO 30, 14
? *
? *
? *
? *
? *
Given a Military Education Level, this program will respond with :
? *
? "NAME, RANK, EDUCATION LEVEL, YEAR-END"
? *
? "The following is a list of Military Education Levels:
and their codes"
? *
? "You can query one at a time"
? *
? *
? *
? *
? *
? *
? *
* "TYPE ANY KEY TO CONTINUE"
* SET CONSOLE OFF
WAIT
SET CONSOLE ON
ERASE

96
DO WHILE Q:FLAG
ERASE
@ 2, 1 SAY "QUERY MILITARY EDUCATION LEVEL;
MAY 1986"

SET COLOR TO 4
? "=================================================================

SET COLOR TO 30, 14
USE MEDLEV
? " MIL. EDUCATION # DESCRIPTION"
? " LIST "
+ MEDLEVID + " " ;
MEDLEDES OFF
SET COLOR TO 30, 14
? " "
? " TEXT
PLEASE SELECT ONE DESIRED MIL. EDUCATION NUMBER, :
ACCORDING TO
THE ABOVE LIST (2 DIGITS PLEASE) e.g. "15" AND HIT:
"RETURN" KEY
ENDTEXT
SET COLOR TO 4
? " "
? " TO FINISH (RETURN TO QUERY MENU OPTION) HIT;
'RETURN'"
? " "
? " ACCEPT "
( 2 DIGITS ) " TO Q:MNO

ERASE
@ 12, 20 SAY "BE PATIENT PLEASE, STILL PROCESSING"
IF Q:MNO = " "
RELEASE ALL LIKE Q*
ERASE
STORE F TO Q:FOUND
STORE F TO Q:FLAG
ELSE
STORE F TO Q:FOUND
USE MEDLEV
INDEX ON MEDLEVID TO QUERY1
SET INDEX TO QUERY1
FIND "&Q:MNO"
IF #=0
ERASE
SET COLOR TO 112, 140
@ 10, 9 SAY " SORRY SCHOOL CANNOT BE FOUND"
? " "
? " PLEASE, SEE THE MIL. EDUCATION NUMBER;
LIST, AND TRY AGAIN"
? " TYPE ANY KEY, TO CONTINUE"

? "

SET CONSOLE OFF
WAIT
SET CONSOLE ON
ERASE
STORE F TO Q:FOUND
ELSE
STORE T TO Q:FOUND
ENDIF
ENDIF
IF Q:FOUND
STORE MEDLEDES TO Q:MEDELEV
, ERASE
STORE MEDLEVID TO Q:MNO
USE MEDLEV
COPY TO TF1 FOR MEDLEVID = "&Q:MNO"

USE TF1
SELECT SECONDARY
USE MILEDU
JOIN TO TF2 FOR P.MEDLEVID=S.MEDLEVID FIELDS S.MEDUID, SERN0, ; MYYEDED, MEDURANK

USE TF2
SELECT SECONDARY
USE MEDULIST
JOIN TO TF3 FOR P.MEDUID=S.MEDUID FIELDS MEDUDES, P.SERNO, ; P.MYYEDED, P.MEDURANK

USE TF3
SELECT SECONDARY
USE OFFICER
JOIN TO TF4 FOR P.SERNO=S.SERNO FIELDS SERNO, NAME, RANKID, ; P.MEDURANK, P.MEDUDES, P.MYYEDED, CORPS

USE TF4
SELECT SECONDARY
USE CORPCODE
JOIN TO TF5 FOR P CORPS=S CORPS FIELDS CORPSDES, P.MEDURANK, ; P.SERNO, P.NAME, P.RANKID, P.MEDUDES, P.MYYEDED

USE TF5
SELECT SECONDARY
USE RANKLIST
JOIN TO TF6 FOR P.RANKID=S.RANKID FIELDS RANKDES, P.SERNO, ; P.NAME, P.MEDUDES, P.MYYEDED, P.CORPCODES

STORE T TO Q:FLAG2
DO WHILE Q:FLAG2

@ 10, 8 SAY " DO YOU WANT TO SEE THE LIST ON;"
SCREEN or HARDCOPY ?
?  "   ENTER 's' FOR SCREEN or 'h':
ACCEPT *
FOR HARDCOPY TO Q:PRN
READ
DO CASE
  CASE Q:PRN = 's'
    STORE F TO Q:FLAG2
    ERASE
  CASE Q:PRN = 'h'
    STORE F TO Q:FLAG2
    ERASE
    SET PRINT ON
    ERASE
  OTHERWISE
    DO ERROR
    ERASE
    STORE T TO Q:FLAG2
    LOOP
ENDCASE
ENDDO

USE TF1
?  "   EQUIVALENT WITH THE LEVEL:
 OF "
 LIST "   " + MEDLEYC OFF
 ?  " " NAME RANK
 SCHOOL YEAR-END"
?  "==================================================================
==================================================================
 use TF6
 LIST " " + NAME + " " + RANKDES + " " + MEDLEYC + " " :
 MYYEDE OFF
 SET COLOR TO 4
?  "==================================================================
==================================================================
 TYPE ANY KEY TO CONTINUE"
?  "
 SET CONSOLE OFF
 WAIT
 SET CONSOLE ON
 SET PRINT OFF
ENDDO
ENDDO
ERASE
ENDDO
ERASE
RETURN
SET TALK OFF
ERASE
SET CONSOLE ON
STORE T TO FLAG
SET COLOR TO 30,14
STORE T TO Q:FLAG
DO WHILE Q:FLAG
  ERASE
  ? ""
  @ 2,1 SAY "QUERY TYPES OF MILITARY; SCHOOL"
  SET COLOR TO 4
  ? "="
  SET COLOR TO 30,14
  ? ""
  ? ""
  ? ""
  ? ""
  ? "" Given a Specific Military School. This program will respond with:"
  ? ""
  ? ""
  ? "" SERNO, NAME, RANK, NAME OF SCHOOL;"
  YEART-START"
  ? ""
  ? ""
  ? ""
  ? "" The following is a list of Military School and their codes"
  ? ""
  ? "" You can query one code at a time "
  ? ""
  ? ""
  ? ""
  ? ""
  ? ""
  SET COLOR TO 4
  ? "="
  ? ""
  TYPE ANY KEY TO CONTINUE"
  SET CONSOLE OFF
  WAIT
  SET CONSOLE ON
DO WHILE Q:FLAG

SET COLOR TO 4
? "---------------------------------------------------------------------------------------------------

---------------------------------------------------------------------------------------------------

SET COLOR TO 30,14
USE MEDULIST
? " MIL. SCHOOL # DESCRIPTION"
? " + MEDUID + "
LIST *

SET COLOR TO 30,14
? " 
? " 
TEXT
PLEASE SELECT ONE DESIRED MIL. SCHOOL NUMBER,;
ACCORDING TO
THE ABOVE LIST (2 DIGITS PLEASE) e.g. "06" AND HIT;
"RETURN" KEY
ENDTEXT
SET COLOR TO 4
? " 
? " TO FINISH (RETURN TO QUERY MENU OPTION):

HIT 'RETURN'"
? " 
? " 
SET COLOR TO 30,14
ACCEPT " (2 DIGITS ) " TO Q:MNO

SET COLOR TO 4
? " 
TO FINISH (RETURN TO QUERY MENU OPTION):

ERASE
@ 12,20 SAY "BE PATIENT PLEASE, STILL PROCESSING"
IF Q:MNO = " "
RELEASE ALL LIKE Q*
ERASE
STORE F TO Q:FOUND
STORE F TO Q:FLAG
ELSE
STORE F TO Q:FOUND
USE MEDULIST
INDEX ON MEDUID TO QUERY2
SET INDEX TO QUERY2
FIND "&Q:MNO"
IF #=O
ERASE
SET COLOR TO 112,140
@ 10,9 SAY "SORRY, SCHOOL CANNOT BE;

FOUND"
FOR HARDCOPY" TO Q:PRN
READ
  DO CASE
    CASE Q:PRN = 's'
      STORE F TO Q:FLAG2
      ERASE
    CASE Q:PRN = 'h'
      STORE F TO Q:FLAG2
      ERASE
      SET PRINT ON
      ERASE
    OTHERWISE
      DO ERROR
      ERASE
      STORE T TO Q:FLAG2
      LOOP
    ENDCASE
  ENDDO
USE TF1
LIST *
  THE NAMES OF OFFICERS ARE
  ? "
  ? "
  ? " SERNO RANK NAME
  CORPS YEAR-START"
  ? " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " " 
USE tf5
LIST " " " SERNO " " " RANKDES " " " NAME " " "
CORPSDES " " " MYYEDST OFF
SET COLOR TO 4
? " " " " " " " " " " " " " " " " " " " " " " " " " " " " " 
? " " " " " " " " " " " " " " " " " " " " " " " " " " " 
? " SET CONSOLE OFF
WAIT
SET CONSOLE ON
SET PRINT OFF
ENDDO
ERASE
ENDDO
ERASE
RETURN
**PROGRAM NAME: QUERYC.PRG**

* AUTHOR: DJCKO M. ARIYADI
* DATE WRITTEN: MAY, 1986
* PURPOSE: GIVEN A SERIAL NUMBER, TO DESCRIBE THAT OFFICER’S PROMOTION HISTORY
* PROGRAMS CALLED BY THIS PROGRAM ARE:
* DBF FILES USED ARE: OFFICER, CORPS, RANK, RANKLIST

---

SET TALK OFF
ERASE
SET CONSOLE ON
STORE T TO FLAG
SET COLOR TO 30,14
STORE T TO Q:FLAG
DO WHILE Q:FLAG
ERASE
?
@ 2,1 SAY "QUERY OFFICER'S PROMOTION HISTORY: MAY 1986"

SET COLOR TO 4
?

"====================================

SET COLOR TO 30,14
?
?
?
?
?
?
?
?
Given an Officer's Serial Number, this program will respond with :"
?
?
" HIS PROMOTION HISTORY, INCLUDING DATE AND ORDER NUMBER"
?
?
?
The following is a list of Officer’s Serial Number and it’s name"
?
?
You can type serial number which you like to know"
?
?
?
?
?
?
?
?
?
?
?
?
?
?
?
SET COLOR TO 4
?

"====================================

?" " TYPE ANY KEY TO CONTINUE"

SET CONSOLE OFF

104
WAIT

SET CONSOLE ON
ERASE
DO WHILE Q:FLAG
  ERASE
  @ 2,1 SAY "QUERY OFFICER'S RANK : MAY 1986"
SET COLOR TO 4
  "=" * 40 ;
SET COLOR TO 30, 14
USE OFFICER
INDEX ON SERNO TO DXOFF
SET INDEX TO DXOFF
? " OFFICER'S SERIAL #, ALREADY ON THIS;
FILE"
? " "
? " 
? " 
LIST " 
OFF
SET COLOR TO 30, 14 
? " 
? " 
TEXT 
PLEASE SELECT ONE DESIRED MIL. EDUCATION NUMBER, 
ACCORDING TO 
THE ABOVE LIST (2 DIGITS PLEASE) e.q. "06" AND HIT ; 
"RETURN" KEY
ENDTEXT
SET COLOR TO 4 
? " 
? " 
TO FINISH (RETURN TO QUERY MENU OPTION);
HIT 'RETURN' " 
? " 
SET COLOR TO 30, 14 
ACCEPT " 
( 6 DIGITS ) " TO Q:MNO
ENTER SERIAL NUMBER e.q: 
ERASE 
@ 12,20 SAY "BE PATIENT PLEASE, STILL PROCESSING"
IF Q:MNC = " " 
  RELEASE ALL LIKE Q*
  ERASE 
  STORE F TO Q:FOUND 
  STORE F TO Q:FLAG 
ELSE 
  STORE F TO Q:FOUND 
  FIND 
"&Q:MNO"
IF #>=0 
  ERASE 
  SET COLOR TO 112, 140 
  @ 10, 9 SAY " 
  SORRY, SERIAL NUMBER CANNOT BE; 

105
FOUND

?  "
?"  PLEASE, SEE THE SERIAL NUMBER'S LIST;
AND TRY AGAIN

?  "
?"  TYPE ANY KEY, TO CONTINUE

SET CONSOLE OFF
WAIT
SET CONSOLE ON
ERASE
STORE F TO Q:FOUND
ELSE
STORE T TO Q:FOUND
ENDIF
ENDIF
IF Q:FOUND
STORE NAME TO Q:OFF
ERASE
STORE SERNO TO Q:MNO
USE OFFICER
COPY TO TF1 FOR SERNO = "&Q:MNO"
USE TF1
SELECT SECONDARY
USE RANKLIST
JOIN TO TEMP1 FOR P.RANKID=S.RANKID FIELDS P.SERNO,P.NAME,;
RANKDES,P.CORPS

USE TEMP1
SELECT SECONDARY
USE CORPCODE
JOIN TO TEMP2 FOR P.CORPS=S.CORPS FIELDS P.SERNO,P.NAME,;
P.RANKDES,CORPSDES,P.NAME

USE TF1
SELECT SECONDARY
USE RANK
JOIN TO TF FOR P.SERNO=S.SERNO FIELDS S.RANKID,RANKDD,RANKMM,;
RANKYY,RORNO,FDATORNO

USE TF
SELECT SECONDARY
USE RANKLIST
JOIN TO TF3 FOR P.RANKID=S.RANKID FIELDS RANKDES,P.RANKDD,;
P.RANKMM,P.RANKYY,P.RORNO,P.RDATORNO
USE TF3
SORT ON RANKYY TO TF4 ASCENDING

STORE T TO Q:FLAG2
DO WHILE Q:FLAG2
@ 10,8 SAY "  DO YOU WANT TO SEE THE LIST ON SCREEN ;
or HARDCOPY ?"
?" "
ACCEPT " ENTER 's' FOR SCREEN or 'h'; FOR HARDCOPY" TO Q:PRN
READ
DO CASE
  CASE Q:PRN = 's'
    STORE F TO Q:FLAG2
    ERASE
  CASE Q:PRN = 'h'
    STORE F TO Q:FLAG2
    ERASE
    SET PRINT ON
    ERASE
  OTHERWISE
    DO ERROR
    ERASE
    STORE T TO Q:FLAG2
    LOOP
ENDCASE
ENDDO
USE TEMP2
? " PROMOTION HISTORY FOR :
? " LIST " " + SERNO + " " + NAME + " " + RANKDES + ;
" " + CORPSDES OFF
? " " ? " RANK DATE MONTH YEAR;
ORDER-NUMBER"
? " =---------------------------------------------------------------------;

USE TF4
LIST " " + RANKDES + " " + RANKDD + " " + RANKMM + " " + RANKYY + " " + RORNO OFF
SET COLOR TO 4
? " =---------------------------------------------------------------------;

? " TYPE ANY KEY TO CONTINUE"
SET CONSOLE OFF
WAIT
SET CONSOLE ON
SET PRINT OFF
ENDIF
ENDDO
ERASE
ENDDO
ERASE
RETURN

107
* PROGRAM NAME : QUERD.PRG
* AUTHOR : DJOKO M. ARIYADI
* DATE WRITTEN : MAY, 1986
* PURPOSE : TO OBTAIN AN OFFICER'S JOB HISTORY, GIVEN A SERIAL NUMBER
* DBF FILES USED ARE : OFFICER, CORPS, RANKLIST, JOBOFF, JOB2LIST

SET TALK OFF
ERASE
SET CONSOLE ON
STORE T TO FLAG
STORE T TO Q:FLAG
DO WHILE Q:FLAG
  ERASE
  ? " "
  @ 2,1 SAY "QUERY OFFICER'S JOB HISTORY MAY 1986"
  SET COLOR TO 4
  ? "="
  SET COLOR TO 30,14
  ? "Given a Officer's Serial Number, This program:
  respond with :
  ? "OFFICER'S JOB HISTORY, INCLUDES RANK, DATE,
STATION, AND CITY"
  ? "The following is a list of Officer's Serial:
Number and their name 
  ? "You can query one serial number at a time;
to know
  ? "? "
  SET TALK OFF
  TYPE ANY KEY TO CONTINUE"
  SET CONSOLE OFF
  WAIT

108
SET CONSOLE ON
ERASE
DO WHILE Q:FLAG
  ERASE
  @ 2,1 SAY "QUERY OFFICER'S JOB HISTORY: MAY 1986"
  SET COLOR TO 4
  ? "=====================================================================
  =---------------------------------------------------------------------=
  SET COLOR TO 30,14
  USE OFFICER
  INDEX ON SERNC TO DXOFF
  SET INDEX TO DXOFF
  ? " OFFICER'S SERIAL #, ALREADY CN THIS;
  FILE"
  ? " " SERIAL # NAME"
  ? " " LIST " + SERNO + " + ;
  NAME OFF
  SET COLOR TO 30,14
  ? " "
  ? " "
  TEXT
    PLEASE SELECT ONE DESIRED OFFICER SERIAL NUMBER,
    ACCORDING TO
      THE ABOVE LIST (6 DIGITS PLEASE) e.g. "001111" AND
    HIT "RETURN" KEY
  ENDTTEXT
  SET COLOR TO 4
  ? " "
  ? " " TO FINISH (RETURN TO QUERY MENU OPTION);
  HIT 'RETURN'"
  ? " "
  SET COLOR TO 30,14
  ACCEPT " (6 DIGITS ) " TO Q:MNO
  ERASE
  @ 12,20 SAY "BE PATIENT PLEASE, STILL PROCESSING"
  IF Q:MNO = " "
    RELEASE ALL LIKE Q-
  ERASE
  STORE F TO Q:FOUND
  STORE F TO Q:FLAG
  ELSE
    STORE F TO Q:FOUND
    FIND "&Q:MNO"
  IF #=0
    ERASE
    @ 10,9 SAY " SORRY, SERIAL NUMBER CANNOT BE;"
FOUND
? " "
AND TRY AGAIN
? " "
SET CONSOLE OFF
WAIT
SET CONSOLE ON
ERASE
STORE F TO Q:FOUND
ELSE
STORE T TO Q:FOUND
ENDIF:
ENDIF
IF Q:FOUND
STORE NAME TO Q:OFF
ERASE
STORE SERNO TO Q:MNO
USE OFFICER
COPY TO TF1 FOR SERNO = "&Q:MNO"
USE TF1
SELECT SECONDARY
USE RANKLIST
JOIN TO TEMP1 FOR P.RANKID=S.RANKID FIELDS P.SERNO, P.NAME,;
RANKDES, P.CORPS
USE TEMP1
SELECT SECONDARY
USE CORPCODE
JOIN TO TEMP2 FOR P.CORPS=S.CORPS FIELDS P.SERNO, P.NAME,;
P.RANKDES, CORPSDES
USE TF1
SELECT SECONDARY
USE JOBOFF
JOIN TO TF FOR P.SERNO=S.SERNO FIELDS JOBRANK, JOBID, JOBDD,;
JOBMM, JOBYY
USE TF
SORT ON JOBRANK TO TF2 DESCENDING
USE TF2
SELECT SECONDARY
USE RANKLIST
JOIN TO TF3 FOR P.JOBRANK=S.RANKID FIELDS RANKDEG, P.JOBD,;
P.JOBDD, P.JOBMM, P.JOBYY
USE TF3
SELECT SECONDARY
USE JOBLIST

110
JOIN TO TF4 FOR P. JOBID=S. JOBID FIELDS JOBDES, P. RANKDES, ;
P. JOBDD, P. JOBMM, P. JOBYY, JOBSTAT

USE TF4
SELECT SECONDARY
USE STATLIST
JOIN TO TF5 FOR P. JOBSTAT=W. STATCODE FIELDS CITYSTAT, STATDES, ;
P. JOBDES, P. RANKDES, P. JOBDD, P. JOBMM, P. JOBYY

USE TF5
SELECT SECONDARY
USE CITYLIST
JOIN TO TF6 FOR P. CITYSTAT=W. CITYCODE FIELDS P. RANKDES, ;
P. JOBDES, P. JOBDD, P. JOBMM, P. JOBYY, P. STATDES, CITYDES

STORE T TO Q:FLAG2
DO WHILE Q:FLAG2
@ 10,8 SAY " DO YOU WANT TO SEE THE LIST ON SCREEN; or HARDCOPY ?"
? " "
ACCEPT " ENTER 's' FOR SCREEN or 'h';
FOR HARDCOPY" TO Q:PRN
READ
DO CASE
CASE Q:PRN = 's'
STORE F TO Q:FLAG2
ERASE
CASE Q:PRN = 'h'
STORE F TO Q:FLAG2
ERASE
SET PRINT ON
ERASE
OTHERWISE
DO ERROR
ERASE
STORE T TO Q:FLAG2
LOOP
ENDCASE
ENDDO

USE TEMP2
? " "
LIST " " + SERNO + " " + NAME + " " + RANKDES +:
" " + CORPSDES OFF
? " "
? " " + RANK
MM/YY STATION CITY
? " " " " + JOB

====================================================================

USE TF6
INDEX ON JOBYY-JOBBMM TO TF7
USE TF6 INDEX TF7
LIST RANKDES, JOBDES, JOBM, JOBYY, STATDES, CITYDES OFF
SET COLOR TO 4
? "==================================================================

TYPE ANY KEY TO CONTINUE"

? "
SET CONSOLE OFF
WAIT
SET CONSOLE ON
SET PRINT OFF
ENDIF
ENDDO
ERASE
ENDDO
ERASE
RETURN
**PROGRAM NAME**: QUERYE.PRG

**AUTHOR**: DJOKO M. ARiyadi

**DATE WRITTEN**: MAY, 1986

**PURPOSE**: TO OBTAIN AN OFFICER'S JOB ELIGIBLE

**PROGRAMS CALLED BY THIS PROGRAM ARE**:

**DBF FILES USED ARE**: OFFICER, CORPS, RANKLIST, JOBOFF, JOBIST

*SET TALK OFF*

*ERASE*

*SET CONSOLE ON*

*STORE T TO FLAG*

SET COLOR TO 30, 14
STORE T TO Q:FLAG
DO WHILE Q:FLAG
  ERASE
  ? " "
  @ 2,1 SAY "QUERY OFFICER'S JOB ELIGIBLE MAY 1986"

SET COLOR TO 4
? "="

*SET COLOR TO 30,14*
?
?
?
?
?
?
?
?
?
?
?
?
?
?
?

Given a Officer's Serial Number, this program respond with:
?
?
?
? " "
? " "

JOB ELIGIBLE INCLUDES, JOB-ID, DESCRIPTION,;

STATION AND CITY"
?
?
?
?
?
?
?
?
?
?
?

SET COLOR TO 4
?"="

*TYPE ANY KEY TO CONTINUE"*

SET CONSOLE OFF
WAIT
SET CONSOLE ON
ERASE
DO WHILE Q:FLAG
ERASE
@ 2,1 SAY "QUERY OFFICER'S JOB ELIGIBLE:
MAY 1986"
SET COLOR TO 4
? "=============================================
=============================================
SET COLOR TO 30,14
? " "
? " "
? " "
? " "
? " "
TEXT
PLEASE SELECT ONE DESIRED OFFICER' SERIAL NUMBER,
WHICH YOU LIKE TO KNOW (6 DIGITS PLEASE) e.g. "333333" AND HIT;
"RETURN" KEY
ENDTEXT
SET COLOR TO 4
? " "
? " "
? " "
TO FINISH (RETURN TO QUERY MENU OPTION);
HIT 'RETURN'
? " "
SET COLOR TO 30,14
? " "
? " "
ACCEPT " ENTER SERIAL NUMBER e.g:
( 6 DIGITS ) " TO Q:MNO
ERASE
@ 12,20 SAY "BE PATIENT PLEASE, STILL PROCESSING"
USE OFFICER INDEX ON Serno TO DXOFF5
USE OFFICER INDEX DXOFF5
IF Q:MNO = " "
RELEASE ALL LIKE Q*
ERASE
STORE F TO Q:FOUND
STCRE F TO Q:FLAG
ELSE
STORE F TO Q:FOUND
FIND "&Q:MNO"
IF #=-0
ERASE
SET COLOR TO 112,140
@ 10,9 SAY " SORRY, SERIAL NUMBER CANNOT BE:
FOUND"
? " "
PLEASE, SEE THE SERIAL NUMBER LIST AND;
TRY AGAIN*
?*
?*
?*
SET CONSOLE OFF
WAIT
SET CONSOLE ON
ERASE
STORE F TO Q:FOUND
ELSE
STORE T TO Q:FOUND
ENDIF
ENDIF
IF Q:FOUND
STORE NAME TO Q:OFF
ERASE
STORE SERNO TO Q:MNO
USE OFFICER
COPY TO TF15 FOR SERNO = "&Q:MNO"
USE TF15
SELECT SECONDARY
USE RANKLIST
JOIN TO TEMP15 FOR P.RANKID=S.RANKID FIELDS P.SERNC,P.NAME,;
RANKDES,P.CORPS
USE TEMP15
SELECT SECONDARY
USE CORPCODE
JOIN TO TEMP25 FOR P.CORPS=S.CORPS FIELDS P.SERNO,P.NAME,;
P.RANKDES,CORPSDES
STORE T TO Q:FLAG3
DO WHILE Q:FLAG3
@ 10,8 SAY " JOB AVAILABLE FOR THE SAME RANK or 
AFTER PROMOTION ?"*
"*
ACCEPT *
"*
PROMOTION" TO Q:PRN
READ
DO CASE
CASE Q:PRN = 's'
STORE F TO Q:FLAG3
use tf15
SELECT SECONDARY
USE JOBRNK
JOIN TO TF25 FOR P.RANKID=S.JOBRK FIELDS JOBID
ERASE
CASE Q:PRN = 'p'
STORE F TO Q:FLAG3
ERASE
USE TF15
STORE 1 TO RK
STORE RANKID TO MRANK
STORE MRANK+RK TO RANKID
USE JOBRNK
COPY TO TF25 FOR JOBRK = RANKID
OTHERWISE
  DO ERROR
  ERASE
STORE T TO Q:FLAG3
LOOP
ENDCASE
ENDDO

USE TF15
SELECT SECONDARY
USE JOBEDU
JOIN TO TF35 FOR P.EDUID=S.JOBED FIELDS JOBID

USE TF15
SELECT SECONDARY
USE JOBCORP
JOIN TO TF45 FOR P.CORPS=S.JOBCO FIELDS JOBID

USE TF25
SELECT SECONDARY
USE TF35
JOIN TO TF55 FOR P.JOBID=S.JOBID FIELDS JOBID

USE TF55
SELECT SECONDARY
USE TF45
JOIN TO TF65 FOR P.JOBID=S.JOBID FIELDS JOBID

USE JOBLIST
SELECT SECONDARY
USE TF65
JOIN TO TF75 FOR P.JOBID=S.JOBID FIELDS P.JOBID, JOBDES, JOBSTAT

USE TF75
SELECT SECONDARY
USE STATLIST
JOIN TO TF85 FOR P.JOBSTAT=S.STATCODE FIELDS STATDESC, CITYSTAT, ; P.JOBID, P.JOBDES

USE TF85
SELECT SECONDARY
USE CITYLIST
JOIN TO TF95 FOR P.CITYSTAT=S.CITYCODE FIELDS P.JOBID, ; P.JOBDES, P.STATDES, CITYDES

STORE T TO Q:FLAG2
DO WHILE Q:FLAG2
10.8 SAY "DO YOU WANT TO SEE THE LIST ON SCREEN:
or HARDCOPY ?"
? " ACCEPT *
FOR HARDCOPY" TO Q:PRN
READ
DO CASE
   CASE Q:PRN = 's'
      STORE F TO Q:FLAG2
      ERASE
   CASE Q:PRN = 'h'
      STORE F TO Q:FLAG2
      ERASE
      SET PRINT ON
      ERASE
   OTHERWISE
      DO ERROR
      ERASE
      STORE T TO Q:FLAG2
      LOOP
ENDCASE
USE TEMP25
?> "*)
?" 
LIST " + SERNO + " " + NAME + " " + RANKDES;
> " + CORPSDES OFF
? " 
? " JOB-ID DESCRIPTION STATION
; CITY"
? "=====================================================================
USE TF95
LIST " + JOBID + " " + JOBDES + " " + STATDES + ;
" + CITYDES OFF
SET COLOR TO 4
? "=====================================================================
? " TYPE ANY KEY TO CONTINUE"
SET CONSOLE OFF
WAIT
SET CONSOLE ON
SET PRINT OFF
ENDIF
ENDDO
ERASE
ENDDO
ERASE
RETURN
LIST OF REFERENCES


INITIAL DISTRIBUTION LIST

1. Defense Technical Information Center
   Cameron Station
   Alexandria, Virginia 22314
   No. Copies: 2

2. Library, Code 0142
   Naval Postgraduate School
   Monterey, California 93943-5000
   No. Copies: 2

3. Curricular Officer, Code 37
   Computer Technology
   Naval Postgraduate School
   Monterey, California 93943-5000
   No. Copies: 1

4. Department Chairman, Code 54
   Department of Administrative Sciences
   Naval Postgraduate School
   Monterey, California 93943-5000
   No. Copies: 1

5. Prof. Daniel R. Dolk PhD
   Code 54DK
   Naval Postgraduate School
   Monterey, California 93943-5000
   No. Copies: 1

6. Prof. R. A. McGonigal PhD
   Code 54MB
   Naval Postgraduate School
   Monterey, California 93943-5000
   No. Copies: 1

7. Komandan Korps Marinir
   Jln. Kavitang
   Jakarta Pusat, Indonesia
   No. Copies: 1

8. Deputy Personil Kasal
   Mabes TNI-AL
   Cilangkap,
   Jakarta, Indonesia
   No. Copies: 1

9. Kepala Biro Pullahta Setjen Dephankam
   Jl. RS Fatmawati - Pondok Labu,
   Jakarta Selatan, Indonesia
   No. Copies: 1

10. Kadis Pullahta TNI-AL
    Wisma Lumba-Lumba
    Jl. Gatot Subroto 12 - Senayan
    Jakarta Pusat, Indonesia
    No. Copies: 1
10. Ibu Darmadi  
    Jl. Dua No. 39 Perum Korpri Kramat  
    Magelang 56115, Indonesia.

11. Major Mar. Djoko Murti Ariyadi  
    Komplex Biro Pullahta Hankam No. G-1  
    Jl. RS Fatmavati - Pondok Labu,  
    Jakarta Selatan, Indonesia