DESIGN AND IMPLEMENTATION OF A PROTOTYPE MICROCOMPUTER DATABASE MANAGEMENT SYSTEM FOR THE STANDARDIZATION OF DATA ELEMENTS FOR THE DEPARTMENT OF DEFENSE

by

John S. Bacheller

September 1990

Thesis Advisor: Daniel R. Dolk

Approved for public release; distribution is unlimited.
DESIGN AND IMPLEMENTATION OF A PROTOTYPE MICROCOMPUTER DATABASE MANAGEMENT SYSTEM FOR THE STANDARDIZATION OF DATA ELEMENTS FOR THE DEPARTMENT OF DEFENSE

The need for data management standardization has been clearly identified by the Office of the Secretary of Defense as a means to realize savings in the $9 billion spent annually on information technology in DoD and to further the sharing of information. This thesis discusses the importance of data element standardization as a foundation for standardizing Management Information Systems within DoD. Moreover, this thesis identifies the data requirements, functional requirements, logical database design and application design for a prototype microcomputer dictionary system for standardizing, storing, updating and viewing data elements, the lowest level in the hierarchy of metadata. This prototype dictionary is then implemented with a powerful relational database management system, Paradox 3.0. This system will help developers within DoD to build, store, retrieve and use standard data elements.
DESIGN AND IMPLEMENTATION OF A PROTOTYPE MICROCOMPUTER DATABASE MANAGEMENT SYSTEM FOR THE STANDARDIZATION OF DATA ELEMENTS FOR THE DEPARTMENT OF DEFENSE

by

John S. Bacheller
Captain, United States Marine Corps
B.S., University of Southern California, 1982

Submitted in partial fulfillment of the requirements for the degree of

MASTER OF SCIENCE IN INFORMATION SYSTEMS

from the

NAVAL POSTGRADUATE SCHOOL
September 1990

Author: John S. Bacheller

Approved by: Daniel R. Dolk, Thesis Advisor

Magdi N. Kamel, Second Reader

David R. Whipple, Chairman,
Department of Administrative Sciences
ABSTRACT

The need for data management standardization has been clearly identified by the Office of the Secretary of Defense as a means to realize savings in the $9 billion spent annually on information technology in DOD and to further the sharing of information.

This thesis discusses the importance of data element standardization as a foundation for standardizing Management Information Systems within DOD. Moreover, this thesis identifies the data requirements, functional requirements, logical database design and the application design for a prototype microcomputer dictionary system for standardizing, storing, updating and viewing data elements, the lowest level in the hierarchy of metadata. This prototype dictionary is then implemented in a powerful relational database management system, Paradox 3.0.

This system will help developers within DOD to build, store, track and use standard data elements.
# TABLE OF CONTENTS

## I. DEFINITION PHASE .......................... 1
   A. BACKGROUND ............................ 1
   B. PROBLEM DEFINITION .................... 4
   C. PROJECT SCOPE ......................... 5
      1. Technical Feasibility ............... 6
      2. Economical Feasibility ............. 6
      3. Political Feasibility ............... 6
   D. METHODOLOGY ............................ 7

## II. REQUIREMENTS PHASE ...................... 9
   A. DATA REQUIREMENTS ..................... 9
      1. The Concept of Data and the Data Element 9
      2. The Structure of Data: "Object Oriented Methodology" 15
   B. FUNCTIONAL COMPONENT REQUIREMENTS .... 19
      1. Update Mechanisms .................... 20
      2. Display Mechanisms ................... 22
      3. Control Mechanisms ................... 25
      4. Summary ............................... 25

## III. DESIGN PHASE ........................... 26
ACKNOWLEDGEMENT

This thesis is dedicated with love to my wife, Maggie, and my wild children, Leigh and Stephen.

Special thanks to Bruce Haberkamp, Maryjo Matera, and Maj Lasher at ODISC4 and LtCol Phil Olson at CIM. Also, special thanks to Glenda Hurley, Becky Harris, Jim Glymph and Jim Pypher at DMD, Ft. Belvoir. Cheers!
I. DEFINITION PHASE

A. BACKGROUND

The need for data management standardization has been clearly identified by the Office of the Secretary of Defense (OSD). Savings in both the $9 billion spent annually on information technology and in Department of Defense (DOD) business-related areas (that these systems support) can be realized through standardization [Ref. 1]. OSD’s general goals are:

1. Consolidate multiple systems that meet the same functional requirements.
2. Reduce unnecessary redundancy.
3. Develop common data requirements and formats.

As a result of the implementation of Defense Management Report Decision (DMRD) 925, DOD Corporate Information Management (CIM) was established in October 1989, as the agency directed to "enhance the availability and standardization of information in common areas and provide for the development of integrated Management Information Systems (MIS) [Ref. 2]."

CIM, in its infancy, is working closely with the Department of the Army’s Office of the Director of Information Systems for Command, Control, Communications and Computers
(ODISC4) to promulgate data management standardization. ODISC4 is the senior policy official for data management in the Army (see Figure 1.1). The Army Data Management and Standards Program, Army Regulation 25-9 (AR 25-9) published on September 25, 1989, provides general guidelines and specific
rules and responsibilities for data element standards [Ref. 3].

The data element is the lowest level in the hierarchy of metadata, or data that describes data (see Figure 1.2) [Ref. 4]. Because it is the lowest level, standardization is crucial, and therefore a top priority in the eyes of CIM and ODISC4. This focus on the data element as the foundation for standardization has led to creation of the Army Data Dictionary (ADD) Automated Dictionary Support System (ADSS).

![Diagram showing relationship between database, record, and data element.](image)

This system resides on an IBM 90370 minicomputer and is managed by the Data Management Directorate (DMD), a subagency of the Army Information Systems Command (ISC). The ADD is a
repository of data elements and the building blocks from which they are made [Ref. 5]. The purpose of the ADD ADSS is to ensure information sharing among organizational elements across functional lines. It allows the Information Class Proponents (ICP: the owners of a data element according to information class), organization data administrators and system developers to capture, query, maintain and approve Army standard elements. It is accessible through the:


Comments, candidate elements and element approvals or disapprovals can be uploaded to the system via these networks. Currently, however, the data elements cannot be downloaded via network (dial-up line) to the ICP's, data administrators and developers. Though the information is available in 'hard' copy and nine track tape, there are no dedicated subsystems (minicomputer and microcomputer) with a relational Database Management System (DBMS) that can be used at lower levels as a data element dictionary and desktop glossary.

B. PROBLEM DEFINITION

The problem is to create a prototype data element dictionary that will allow ICP's, data administrators and
developers to manipulate, maintain and view standard data elements and the processes which support their lifecycle from naming convention to definition and approval. Based on the emphasis of cost-savings through standardization, this prototype system must satisfy the following constraints:

1. Use current in-house 80286 central processing unit (cpu) based microcomputers.

2. Use no more than 640 kilobytes (K) of Random Access Memory (RAM).

3. Use an off-the-shelf DBMS, preferably a relational DBMS.

C. PROJECT SCOPE

The scope of this thesis is confined to the creation of a prototype data element dictionary within the given constraints. This dictionary will employ the logical model and physical table structure of the ADD ADSS to the greatest extent possible to encourage future considerations of an indirect (disk or tape media) or direct (dedicated/dial-up line) data download capability. However, this system will be built on the premise of manual data entry. Also, the ADD ADSS is written in Standard Query Language (SQL) Cobol and few commercial microcomputer DBMS's offer complete SQL
capability within RAM limits. Therefore, differences in the two systems will exist.

1. **Technical Feasibility**

   Both the hardware and the software needed to develop this prototype are available. The software selected as the relational DBMS is Borland's Paradox 3.0. Paradox uses its own Programming Application Language and has future growth potential in soon-to-be-released Paradox SQL and a Compiler (TSR Corporation, New York). One minor issue is that data field lengths are limited to 250 characters which falls short of a few fields described in AR 25-9.

2. **Economical Feasibility**

   Overall, savings in the current budget of $9 billion as well as the out-year savings are the "drivers" of this standardization issue. For this thesis, use of existing facilities and equipment as well as "research-oriented" labor will help minimize costs. User training costs will be kept at a minimum because the prototype will be menu driven and require little dedicated training.

3. **Political Feasibility**

   In an environment where "budget deficit reduction" is the watch-word and consolidation and centralization of functions is the trend, development of a prototype system to aid standardization can only be viewed as a positive
impetus toward information sharing, communication, and resulting cost savings. The CIM/ODISC4 mission needs to be supported by all services. This dictionary system positively supports the CIM/ODISC4 mission.

D. METHODOLOGY

The methodology of this thesis will center on the following:

1. Provide CIM and Army background, define the problem and describe a proposed solution.

2. Using an object-oriented approach, determine and develop user requirements and relational database design for a passive data element dictionary. The object-oriented approach involves creating data objects from the data required by the user for inclusion in the system. This approach is described in detail in Chapter II.

3. Implement the relational design in a prototype system. Provide a User's Manual for the prototype system.

The structure of this thesis will mirror the methodology. Chapter II describes the system requirements, including the definition and structure of the user's data as well as the functional components of the system (update, display and control mechanisms). Chapter III develops a relational design of the dictionary. Chapter IV presents an implementation of the design, including a User's Manual.
Chapter V summarizes conclusions and suggests further enhancements to the prototype.
II. REQUIREMENTS PHASE

The purpose of the requirements phase for a database application is to determine, from user input, what data will be used and how that data will be manipulated. Specifically, user requirements definition involves satisfying two primary goals: (1) identification of data requirements (the concept and the structure of data that represents the user's environment), and (2) identification of the functional components (update, display and control mechanisms) that the applications will use. The following sections will address each of these goals.

A. DATA REQUIREMENTS

1. The Concept of Data and the Data Element

   The term "data element" has been used loosely up to this point. Because this prototype is essentially a data element dictionary, it hinges on the concept of data and the data element as defined and standardized in AR 25-9.

   Data are the basic units of information in information systems and are represented as raw numbers, words or codes. An item or instance of data is called a
data value. There are two types of data values, qualitative and quantitative. Qualitative data consists of data values that represent some aspect of a "thing" and are construed as literal data (like words in a paragraph) or data code (symbology used to represent literal data like social security number). Quantitative data are numerical expressions of data in real number or integer format. For example, the word "name" is qualitative, identifying or qualifying an object. On the other hand, the word "length" is quantitative, providing a quantified measurement.

A data element is a named piece of data that is of interest to a person or organization. It describes or defines an attribute or quality of an entity (person, place, thing, object, concept or event) or relationship [Ref. 6]. It must be unambiguously defined, logically consistent, and possess a homogeneous domain of associated values. An example of a standardized data element is "Individual Social Security Account Number." By using the word "Individual" instead of a more qualified term like "Officer’s" or "Spouse’s," redundancy in capturing information has been avoided. For example, if qualified terms were used, the database might have at least five separate data elements dedicated to identifying social security number:

1. Officer’s Social Security Number
2. Warrant Officer’s Social Security Number
3. Enlisted’s Social Security Number
4. Spouse’s Social Security Number
5. Child’s Social Security Number

Data elements one through five each contain the same type of data but for different types of individuals. If the qualification is raised one level to make the individuals generic, then one data element may be used instead of five or more (in the case of more, consider a person with ten children, etc.). Using the "single" data element for social security number, a relationship or qualification can be generated by associating another data element with it (see Figure 2.1) [Ref. 7].

Standardized data elements should not contain relationships or dependencies. Where these dependencies exist, data elements can be raised one level or more into a more generic data description level in order to "singularize" it. Thus, an individual either has a social security number or he does not; and, as data administrators or developers, we should not have to manage a myriad of differently-named data elements that describe the same thing, in this case social security number. AR 25-9 provides a set of rules and constraints for naming, structuring, and defining these data elements [Ref. 8].
These rules prevent redundancy, minimize the amount of data elements needed, and provide guidelines to the developer for creation of new data elements that may be needed in a new system.

<table>
<thead>
<tr>
<th>Data Element Standardization: &quot;Single Concept&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Officer's Social Security Number</td>
</tr>
<tr>
<td>2. Warrant Officer's Social Security Number</td>
</tr>
<tr>
<td>3. Enlisted's Social Security Number</td>
</tr>
<tr>
<td>4. Spouse's Social Security Number</td>
</tr>
<tr>
<td>5. Child's Social Security Number</td>
</tr>
<tr>
<td>1. Individual Social Security Account Number</td>
</tr>
<tr>
<td>+</td>
</tr>
<tr>
<td>2. Individual Personnel Type Name</td>
</tr>
</tbody>
</table>

Figure 2.1. Single Data Element Concept.

a. Data Element Naming and Structure

Data elements consist of a name, attributes (for description), and a general or specific domain. A data element acquires organizational context through a "prime term" and inherits its structure and domain of values from a "reference element." AR 25-9 emphasizes that
standardization is gained through the structure of the data element, not through its use.

(1) Naming. A data element name is constructed by adding a prime term to a reference element (see Figure 2.2). The prime term has a prime word (required) and up to six optional modifiers. Prime words come from a finite set within each Army data subject-area. Positionally, the prime word can reside anywhere within the prime term. See Appendix A for a list of prime words and their associated
data subject-areas. A modifier helps refine or render a unique name for a data element, and it cannot be a prime word or a class word. For example, in the data element "Individual Social Security Account Number," the prime term is "Individual Social Security Account." The prime word is "Individual" and comes from the Army data subject-area of Personnel. The modifiers in this case are "Social Security Account" and serve to uniquely identify the prime word.

The reference element has an optional modifier, a class word (required), and two optional qualifiers (in that order). The modifier plays the same role as described above. The class word specifies the type of information contained in a set of data values. See Appendix B for a list of class words. Qualifiers "further describe a characteristic of the information within a common set of data values" [Ref. 9]. For example, in the data element "Individual Social Security Account Number," the reference element is "Number." See Appendix C for a detailed list of naming conventions from AR 25-9.

(2) Structure. The data element derives its structure from the reference element. The data element will either take on the domain of the reference element or a subset of it. Thus, if a reference element is a qualitative
data value type, then the data element that is derived from it will also be of qualitative data value type. In the example "Individual Social Security Account Number," the reference element is "Number" which is qualitative data in the form of data code. As a result, the data element is qualitative data in the form of data code and adopts the domain (or a subset) of "Number" (see Figure 2.3). A specific example of the data element domain is: "a specific domain of nine characters comprised of the characters 0-9."

To associate nonstandard data element names used in existing information systems with standardized data elements, the term "data element alias" will be used. The data element alias will be associated with its host system and location. When associated with a data element, it will reflect the data value type (qualitative or quantitative) of the data element. As nonstandardized information systems grow obsolete and are phased-out, data element aliases will be eliminated.

2. The Structure of Data: "Object Oriented Methodology"

An "object oriented" methodology will be used to determine and present the user's data requirements. According to Kroenke and Dolan, an object is defined as "a named collection of properties that sufficiently describes an entity in the user's work environment [Ref. 10]." An
"entity" is defined as an independent unit that owns its own elements. A "property" is a characteristic of the entity (an item that is "owned"). For example, DATA ELEMENT (note the capitalization) is the object and Data Element Number, Data Element Name, and Data Element Alias Name may be properties. Properties can be singular, as in the case of Data Element Number, where a DATA ELEMENT has just one number or multi-valued (mv), as in the case of DATA ELEMENT ALIAS NAME, where a DATA ELEMENT can have more than one alias name. A property may also be an object, with
properties of its own. In the last example, DATA ELEMENT ALIAS NAME is really a multi-valued object property.

Entities, objects, and properties can be combined into an **object diagram** that provides a visual presentation of the data within the user's environment. Boxes are used to represent an object and an object's properties are shown within the box. Figure 2.4 shows an object diagram of the DATA ELEMENT example.

The objects used in the Data Element Dictionary prototype closely follow those used in the ADD ADSS.

![Figure 2.4. Object Diagram.](image)

Thirteen of the eighteen ADD ADSS objects will be used and retain the same name except where limited by the eight
character filename constraint enforced by DOS. The thirteen objects are as follows:

1. APWTRELM = Reference Element - A reference element's attributes.
2. APWTREQD = Reference Element Data Value Number - A reference element's quantitative data values.
3. APWTREFD = Reference Element Data Item - A reference element's qualitative data values.
4. APWTCWOR = Class Word - Class Words and descriptions.
5. APWTDE = Data Element - A data element's attributes.
6. APWTDEQD = Data Element Data Value Number - A data element's quantitative data values.
7. APWTDEDI = Data Element Data Item - A data element's qualitative data values.
8. APWTAL = Alias Element - An alias' attributes.
9. APWTALQD = Alias Element Data Value Number - An alias' quantitative data values.
10. APWTALDI = Alias Element Data Item - An alias' qualitative data values.
11. APWTSS = Alias Element Host System - Alias' Host system information.
12. APWTPWRD = Prime word and related data subject-area name.
13. APWTIC = Information class, and proponent.

Object diagrams can be viewed in Appendix D. The description and domain definition of the object properties can be viewed in Appendix E.
Once the data requirements have been determined by applying user needs and wants to the object-oriented methodology, the functional components of the dictionary, i.e., how the data will be manipulated, must be determined.

B. FUNCTIONAL COMPONENT REQUIREMENTS

Data, data flows, and data processes as well as user interaction characterize the update, display and control mechanisms that are needed in a system. Data Flow Diagrams (DFD) reveal data and its processes and show users where the user fits-in.

The Yourdon methodology [Ref. 11] was used to develop a "Context Diagram" (top level diagram) to provide a general picture of the proposed system (see Figure 2.5). In the proposed system, the user adds and updates data (update in this case is defined as edit and delete) whose general structure was shown in the object diagrams. Also, the user requests reports (in hard-copy) or queries the system for a "view" (Screen Display) of data. The system interacts with the database to perform these functions.

Specific update, display and control mechanisms are as follows:
1. Update Mechanisms

   a. Add new Reference Element, Data Element, Alias, Class Word, or Prime word

   (1) Inputs. From the user via keyboard.

   (2) Outputs. New object instances.

   (3) Processing notes. General: Must follow Naming Conventions in AR 25-9. Data value type (Qualitative or Quantitative) will be determined by the Reference Element. Data values associated with Reference, Data, and
Alias Elements may be added also. Reference Element: Reference Element Number is required and is built from existing Class Words. Data Element: Data Element Number is required is built from existing and approved Reference Elements and Prime Words. Alias: Alias Number is required. Class Word: Class Word Name is required. Prime Word: Prime Word Name is required.

(4) Volume of records (initial). Reference Elements will have approximately 70. Data Elements will have approximately 50. Alias Element volume is unknown. Class Words will have approximately 39. Prime Words will have approximately 250.

b. Edit existing Reference Element, Data Element, Alias, Class Word or Prime Word

(1) Inputs. From the user via keyboard.

(2) Outputs. Revised object instances.

(3) Processing notes. Reference, Data, Alias Element Numbers cannot be revised or deleted. All other fields including data values may be changed.

c. Delete existing Reference Element, Data Element, Alias, Class Word or Prime Word

(1) Inputs. From the user via keyboard.
(2) Outputs. Removal of object instances.

(3) Processing notes. All "one-to-many" relationships existing on the deletion forms (like data values) must be first deleted, then deletion of the associated Reference, Data, or Alias Element is permitted.

2. Display Mechanisms

a. View Options

(1) View Lists. View a list of Reference Element Numbers and names, Data Element Numbers and Names, Alias Numbers and Names, Class Word Names, and Prime Word Names and subject-area. Sources for each are as follows:

1. Reference Element: Reference Element Object (APWTRELM)
2. Data Element: Data Element Object (APWTDE)
3. Alias Element: Alias Element Object (APWTAL)
4. Class Word: Class Word Object (APWTCWOR)
5. Prime Word: Prime Word Object (APWTCPWOR)

(2) View Detail. View detailed and unique Reference Element, Data Element, Alias Element, Class Word, and Prime Word object instances on data forms within the Edit option. Sources for each are as follows:
1. Reference Element
   Reference Element Object (APWTRELM)
   Reference Element Data Item Object (APWTFRED)
   Reference Element Data Value Number Object (APWTFREQD)

2. Data Element
   Data Element Object (APWTDE)
   Data Element Data Item Object (APWTDEDI)
   Data Element Data Value Number Object (APWTDEQD)

3. Alias Element
   Alias Element Object (APWTAL)
   Alias Element Data Item Object (APWTALDI)
   Alias Element Data Value Number Object (APWTALQD)
   Alias Element Host System Object (APWTSS)

4. Class Word
   Class Word Object (APWTCWOR)

5. Prime Word
   Prime Word Object (APWTPWOR)

b. Printed Report Options

   (1) Print Lists (First Type). A printed list report will be generated on Reference Element, Data Element, and Alias Element object instance Names and numbers. Sources for each are the same as those listed in 'a,' bullet one.

   (2) Print Lists (Second Type). A printed list report will be generated on Class Word Names and on Prime Word Names and Subject-areas. Sources for each are the same as those listed in 'a,' bullet one.
(3) **Print Detail (First Type).** Detailed printed reports will be generated on Reference Element, Data Element, Alias Element, Class Words, and Prime Word object instances and will be selected by the object's unique number. Sources are the same as those listed in paragraph 'a,' bullet two.

(4) **Print Detail (Second Type).** Detailed printed reports will be generated on the data values associated with a Reference Element, Data Element, and Alias Element object instances and be selected by the object's unique number. Data values are either qualitative or quantitative. Sources are as follows:

1. Qualitative Reference Element
   Reference Element Object (APWTRELM)
   Reference Element Data Item Object (APWTREFD)

2. Quantitative Reference Element
   Reference Element Object (APWTRELM)
   Reference Element Data Value Number Object (APWTREQD)

3. Qualitative Data Element
   Data Element Object (APWTDE)
   Data Element Data Item Object (APWTDEDI)

4. Quantitative Data Element
   Data Element Object (APWTDE)
   Data Element Data Value Number Object (APWTDEQD)

5. Qualitative Alias Element
   Alias Element Object (APWTAL)
   Alias Element Data Item Object (APWTALDI)
6. Quantitative Alias Element
   Alias Element Object (APWTAL)
   Alias Element Data Value Number Object (APWTALQD)

3. Control Mechanisms
   a. Password Control

      A password system will be used in connection with the initial introduction screen. Only users with a valid password will have access to applications beyond that.

   b. Form Control

      All objects with their associated update and display mechanisms will be controlled via form. Form fields will be marked and tailored to receive data in a particular format. For example, because a Reference Element is built from existing Class Words, only existing Class Words in their character-string format will be allowed in that specific field.

4. Summary

   In this chapter, user needs were converted into Data Requirements, using an object-oriented methodology, and Functional Component Requirements were converted into update, display and control mechanisms. These requirements will act as the base from which the Design Phase, Logical Design and Application Design, will be built.
Whereas the Requirements Phase involves determination of user needs, the Design Phase translates these requirements into: (1) Logical Database Design consisting of a transformation of the user's data objects into a relational diagram, a description of relationships between objects and relationship constraints and (2) Application Design, including the scope of the functions of the application, a menu hierarchy, and materializations of the menus, forms and reports.

A. LOGICAL DATABASE DESIGN

The first part of the logical design process involves transforming the objects, as defined in chapter two and exhibited in Appendix D, into relations using Kroenke and Dolan's relational database model methodology. Kroenke and Dolan state,

The relational model is based on the concept that data is organized and stored in two-dimensional tables called relations. You can think of a relation as a file, and of each row in the relation as a record [Ref. 12]. An object is transformed into a relation by "stretching out" its properties horizontally. The properties become
attributes of the object. Then, object instances (what Kroenke and Dolan call "records") can be filled in underneath the relation's structure (See Figure 3.1). Each row is known as a tuple and each column represents a field (also called an attribute).

<table>
<thead>
<tr>
<th>Relm_counter</th>
<th>Dv_type_Id</th>
<th>M_name</th>
<th>C_name</th>
<th>Q_1</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Relm_counter
Dv_type_Id
M_name
C_name
Q_1

APWTRELM

Figure 3.1. Object Transformation.

These attributes must be single-valued and have no repeating groups or arrays. Also, attributes must have a unique name, preventing creation of identical rows (or tuples) that would constitute duplication of data. A "key" is one or more fields or attributes, the value(s) of which uniquely identifies a row. Use of unique keys prevents data duplication. In Figure 3.1, each record has a unique
reference element number (Relm_counter) which serves as the key.

Each object becomes a set of related attributes or properties. The process of gathering properties into relations is known as normalization. Normalization is an important aspect of database design and will be applied to the design of the prototype dictionary. However, normalization "normal form" levels will not be discussed in detail.

In the second part of the logical design, binary relationships are used to link or join records in different relations, showing the dependencies between them. There are three types of basic binary relationships: one-to-one (1:1), one-to-many (1:N), and many-to-many (M:N). The binary relationships between relations can be used to build a tree structure that depicts how relations are linked and depend upon one another. This tree is called a relational diagram. The relational diagram, Figure 3.2, shows the prototype dictionary links. Lines or branches show the links. All 13 relations participate in one-to-many relationships as evidenced by a fork on one side of the branch. For example, a Class Word (APWTcwor) may be in multiple Reference Elements (APWTRELM), but a Reference Element can only have one Class Word. Thus, constraints between relations are
identified in the diagram. Other constraints in these relationships are shown by placing symbols on the branches. The short horizontal line means "required" and the small circle connotes "optional." Returning to the example above, a Class Word may be optionally present in a Reference Element (it is independent), whereas, a Reference Element must have one and only one Class Word (it is functionally dependent on Class Word). Another symbol found within the relation box is an "F" which denotes a "foreign key." A foreign key is typically found in one-to-many relationships and occurs when the key of the parent is resident in that of the child. For example, APWTRELM has a 1:N relationship with APWTFRED (see Figure 3.2). Therefore, the Relm_counter attribute of APWTRELM is resident in the child, APWTFRED, as a foreign key.

The AR 25-9 naming conventions shown in Appendix C contain rules that involve relationships which are subsequently captured in the relational diagram. Appendices D and E provide object diagram structure and object property domain definitions respectively. Specific descriptions and relationships of each of the thirteen relations are shown in Appendix F.

The relational diagram shows the optional and required links and dependencies between objects and thus provides a
transition from the logical design to a physical design (transformation of objects into relations). Identification of relations and their relationships provides a foundation from which application design can take place.

![Prototype Dictionary Relational Diagram](image)

Figure 3.2. Prototype Dictionary Relational Diagram.

B. APPLICATION DESIGN

Application design is important because it includes the interface that the user sees, hears, and physically manipulates. The interface is the system to the user. An otherwise great system with a poor interface may not be embraced because it is perceived as too "user-hostile" or time consuming to use. Application design issues that must
be considered are: (1) Scope of the application functions; (2) Menu hierarchy and menu, form and report materializations [Ref. 13].

1. Application Functions Scope

The scope of the prototype dictionary application is centered around three standard functions:

1. User processing control functions;
2. Object query, print, and update functions;
3. Database security and integrity functions.

There are three basic types of application control mechanisms: command-oriented, menu-driven, or icon-driven. The control mechanism that the prototype dictionary uses is menu-driven. Menus permit easy selection of application functions as well as control access to application functions (a user can only select those options offered to him). Also, no commands need to be memorized which helps minimize training. A disadvantage of menus, however, is that they may become tedious to an expert or frequent user.

With respect to the second application function, objects by themselves provide incomplete information. It is the joining or querying of objects with links to other objects that yield the information that the user needs. For
example, if the prototype dictionary user desires to view all of the Data Items of a Reference Element, the relationship between Reference Element (APWTRELM) and Reference Element Data Value Item (APWTREFD) must be queried. The prototype dictionary supports such queries. Along the same lines, several different printed reports from similar queries can be generated (via menu selection) on all Reference Elements, Data Elements, Alias Elements, Class Words and Prime Words within this system. The update functions (add, edit and delete) are available to users as well.

The third function, database security and integrity is also a part of this system. Security is afforded through a password checking system upon initial logon into the system. Data integrity is maintained in different ways. First, masked forms are used in all of the update functions, grouping like attributes for better understanding and ensuring correct data input by permitting only the correct data type (character, integer, floating point, etc) to be entered in each of the fields. Second, some fields are "display-only." For example, if editing a record, the key field must be limited to "display-only" to prevent other previously linked relations from being linked incorrectly to a now newly created data record.
2. Menu Hierarchy and Materializations

Because the user desires a data-oriented system (dictionary), the menu hierarchy uses an object-to-action strategy. This means that choice of object, like Reference Element, is a first level choice, while actions, like add and delete, are second level choices. Figure 3.3 shows the main menu and menu hierarchy overview. Subsequent menu diagrams, though generic in nature, depict the functions of the application accurately.

a. Reference Element Option

Selection of the Reference Element option takes the user to the Reference Element menu where view, add,
edit, delete, print, menu help, and exit options are provided (see Figure 3.4). All form and report

![Reference Element Menu Options](image)

Figure 3.4. Reference Element Menu Options.

materializations are shown in Appendix G. The description of options follows:
(1) **Reference Element list view.** A one-page form is presented that shows Record number, Relm_counter number, Reference Element name and Data Value Type ID. The user may scroll through all of the values, but no updates are permitted.

(2) **Reference Element add.** A detailed four-page form is presented. The key field, Relm_counter, is required to continue the add sequence. Embedded within this form are Qualitative Data Item and Quantitative Data Value forms. This allows data items or data values associated with a Reference Element to be added at the same time. Also, it allows data items and data values to be added to existing Reference Elements.

(3) **Reference Element edit.** The user is first queried for a specific Relm_counter number to edit. From this input, a four-page form, similar to Reference Element add is presented. The key field, Relm_counter number, becomes display-only to preserve the integrity of other linked objects. All other fields may be edited. To prevent accidental deletion of a Reference Element, full deletion is not permitted within this function.

(4) **Reference Element delete.** The user is first queried for a specific Relm_counter number to delete. A three-page form is presented. In order to delete a
Reference Element, all associated Qualitative Data Items or Quantitative Data Values must first be deleted by the user. This removes the 1:N links and preserves the integrity of the database because these values may not exist without a parent Reference Element.

(5) Help Screen. This help screen defines what operations are available under each menu option.

(6) Exit option. This selection allows the user to return to the next higher menu in the hierarchy.

(7) Print Report options. This is a sub-menu for selection of the following printed report options:

1. Print a list of Reference Elements including Record number, Relm_counter number, Reference Element name, and Data Value Type ID.

2. From input of a valid Relm_counter number, print a detailed report on the Reference element using all of the attributes in the Reference Element object.

3. From input of a valid Relm_counter number, print the Qualitative Data Items and their definitions for a specific Reference Element.

4. From input of a valid Relm_counter number, print the Quantitative Data Values and their definitions for a specific Reference Element.

5. This selection enables the user to return to the next higher menu in the hierarchy.
\textbf{b. Data Element Option}

Selection of the Data Element option takes the user to the Data Element menu where view, add, edit, delete, print, menu help, and exit options are provided (see Figure 3.5). All form and report materializations are shown in Appendix G. The description of options follows:

\begin{enumerate}
\item \textit{Data Element list view.} A one-page form is presented that shows Record number, De_counter number, Data Element name and Data Value Type ID. The user may scroll through all of the values, but no updates are permitted.
\item \textit{Data Element add.} A detailed four-page form is presented. The key field, De_counter, is required to continue the add sequence. Embedded within this form are Qualitative Data Item and Quantitative Data Value forms. This allows data items or data values associated with a Data Element to be added at the same time. Also, it allows data items and data values to be added only to existing Data Elements.
\item \textit{Data Element edit.} The user is first queried for a specific De_counter number to edit. From this input, a four-page form, similar to add is presented. The key field, De_counter number, becomes display-only to preserve the integrity of other linked objects. All other
fields may be edited. To prevent accidental deletion of a Data Element, full deletion is not permitted within this function.

Figure 3.5. Data Element Menu Options.

(4) Data Element delete. The user is first queried for a specific De_counter number to delete. A three-page form is presented. In order to delete a Data
Element, all associated Qualitative Data Items or Quantitative Data Values must first be deleted. This removes the 1:N links and preserves the integrity of the database because these values may not exist without a parent Data Element.

(5) Help Screen. This help screen defines what operations are available under each menu option.

(6) Exit option. This selection allows the user to return to the next higher menu in the hierarchy.

(7) Print Report options. This is a sub-menu for selection of the following printed report options:

1. Print a list of Data Elements including Record number, De_counter number, Data Element name, and Data Value Type ID.

2. From input of a valid De_counter number, print a detailed report on the Data Element using all of the attributes in the Data Element object.

3. From input of a valid De_counter number, print the Qualitative Data Items and their definitions for a specific Data Element.

4. From input of a valid De_counter number, print the Quantitative Data Values and their definitions for a specific Data Element.

5. This selection enables the user to return to the next higher menu in the hierarchy.
c. *Alias Element Option*

Selection of the Alias Element option takes the user to the Alias Element menu where view, add, edit, delete, print, menu help, and exit options are provided (see Figure 3.6). All form and report materializations are shown in Appendix G. The description of options follows:

1. **Alias Element list view.** A one-page form is presented that shows Record number, Al_counter number, Alias Name, and associated De_counter numbers. The user may scroll through all of the values, but no updates are permitted.

2. **Alias Element add.** A detailed four-page form is presented. The key field, Al_counter, is required to continue the add sequence. Embedded within this form are Qualitative Data Item, Quantitative Data Value, and Host System Application Data forms. This allows data items or data values associated with an Alias Element to be added at the same time. Also, it allows data items, data values, and host system application data to be added only to existing Alias Elements.

3. **Alias Element edit.** The user is first queried for a specific Al_counter number to edit. From this input, a four-page form, similar to add is presented. The key field, Al_counter number, becomes display-only to
preserve the integrity of other linked objects. All other fields may be edited. To prevent accidental deletion of an

Alias Element, full deletion is not permitted within this function.

(4) Alias Element delete. The user is first queried for a specific Al_counter number to delete. A four-page form is presented. In order to delete an Alias
Element, all associated Qualitative Data Items, Quantitative Data Values, and Host System Application Data must first be deleted. This removes the 1:N links and preserves the integrity of the database because these values may not exist without a parent Alias Element.

(5) Help Screen. This help screen defines what operations are available under each menu option.

(6) Exit option. This selection allows the user to return to the next higher menu in the hierarchy.

(7) Print Report options. This is a sub-menu for selection of the following printed report options:

1. From input of a valid Al_counter number, print a list of Data Elements that are associated with the Alias Element.

2. From input of a valid De_counter number, print a list of Alias Elements that are associated with the Data Element.

3. From input of a valid Al_counter number, print a detailed report on the Alias Element using all of the attributes in the Alias Element object and the Host System Application object.

4. From input of a valid Al_counter number, print the Qualitative Data Items and their definitions for a specific Alias Element.

5. From input of a valid Al_counter number, print the Quantitative Data Values and their definitions for a specific Alias Element.

6. This selection enables the user to return to the next higher menu in the hierarchy.
d. **Class Word Option**

Selection of the Class Word option takes the user to the Class Word menu where view, add, edit or delete, print, and exit options are provided (see Figure 3.7). All form and report materializations are shown in Appendix G.

---

Figure 3.7. Class Word Menu Options.

---

the description of options follows:

---

43
(1) **Class Word list view.** A one-page form is presented that shows Record number and Class Word. The user may scroll through all of the values, but no updates are permitted.

(2) **Class Word add.** A detailed one-page form is presented. The key field, Elm_Clwd_Nme is required to continue the add sequence. This helps maintain data integrity.

(3) **Class Word edit or delete.** The user is first queried for a specific Elm_Clwd_Nme to edit or delete. These two functions, edit and delete were combined into one because there are only a few attributes for this object. Also, Class Words come from a predetermined and finite domain and it is anticipated that there will be little change of the records that exist.

(4) **Exit option.** This selection allows the user to return to the next higher menu in the hierarchy.

(5) **Print Report options.** This is a sub-menu for selection of the following printed report options:

1. Print a list of Class Words.

2. From input of a valid Elm_Clwd_Nme, print a detailed Class Word report.

3. This selection enables the user to return to the next higher menu in the hierarchy.
e. **Prime Word Option**

Selection of the Prime Word option takes the user to the Prime Word menu where view, add, edit or delete, print, and exit options are provided (see Figure 3.8). All form and report materializations are shown in Appendix G. The description of options follows:

1. **Prime Word list view.** A one-page form is presented that shows Record number, Prime Word, and Army Data Subject-area. The user may scroll through all of the values, but no updates are permitted.

2. **Prime Word add.** A detailed one-page form is presented. The key field, Prwd_Nme is required to continue the add sequence. This helps maintain data integrity.

3. **Prime Word edit or delete.** The user is first queried for a specific Prwd_Nme to edit or delete. These two functions, edit and delete were combined into one because there are only a few attributes for this object. Also, Prime Words come from a predetermined and finite domain and it is anticipated that there will be little change of the records that exist.

4. **Exit option.** This selection allows the user to return to the next higher menu in the hierarchy.
(5) *Print Report options.* Because this object only has two objects the only printed report is a list of Prime Words and their associated Army Data Subject-area.

![Diagram of Prime Word Menu Options](image)

**Prime Word Menu Options.**

5.1 View a list of Prime Words
5.2 Add Prime Words
5.3 Edit or Delete Prime Words
5.4 Exit the menu

5.5 Print Reports

5.5.1 Print a list of Prime Words
5.5.2 Print detailed Prime Word Report
5.5.3 Exit the menu

**f. Unique Queries Option**

This menu option is reserved for future use.
g. Help Option

Selection of the Help option moves the user to a one-page help screen. This screen shows a diagram of the menu hierarchy and provides some guidance on how to navigate through the menu hierarchy.

h. Leave Application Option

Selection of this the Leave option generates a "yes-no" question that the user must answer. "Yes" lets the user exit the application. "No" returns the user to the main menu.

3. Summary

This chapter has discussed Logical Database Design, the transformation of objects into relations and their relationships, and Application Design, the scope of functions of the prototype system and menu, form, and report materializations.

To this point, requirements definition, design, and application design phases have been largely generic. The next chapter will deal with implementation issues in connection with the host DBMS, Paradox 3.0.
IV. IMPLEMENTATION PHASE

The Definition, Design, and Application Design phases have been accomplished using "generic" methodologies, such as the Yourdon methodology (Data Flows) and the object-oriented/relational methodology. The implementation phase involves collecting the data descriptions, logical designs (objects and relations), functions and applications and then constructing the physical database and applications using a selected relational DBMS. The implementation phase addresses the choice of a relational DBMS (Paradox 3.0), the construction of the database using the relational DBMS, the problems and benefits found, and the user's manual and application code.

A. SELECTION OF PARADOX 3.0

Over the past few years, the microcomputer world has been dominated by Ashton-Tate's DBase III, III+, and IV products in the relational database arena. With technological improvements in microcomputer processing power (8088 to 80286 to 80386 cpu's and beyond), RAM capacity and speed, and secondary memory storage volume and speed, the demand for more powerful, flexible and user-friendly
relational databases has encouraged new entrants into the market place. An Infoworld study, involving the exhaustive comparison of six relational databases, rated Paradox 3.0 the highest with a score of 9.5 out of a possible 10.0 [Ref. 14]. Benchmarks included the categories of performance, documentation, ease of learning, ease of use, error handling, and support (See Figure 4.1).

Paradox was found to be "the best all around relational database for interactive and development use." Other major systems, such as ORACLE and Ingres were considered, however the most current versions of these products exceeded the RAM limitations listed in Chapter I. Paradox falls within all of the hardware constraints listed in Chapter I.

Paradox 3.0 proved to be a very flexible and capable relational DBMS for building this prototype.

B. CONSTRUCTION OF THE PROTOTYPE USING PARADOX 3.0

Paradox 3.0 offers three different methods for construction of a database system: the standard design module, the Personal Programmer (Application Generator), and the Paradox Application Language (PAL) editor, Paradox's structured programming language. [Ref. 15]. Program capacities include:
<table>
<thead>
<tr>
<th>INFO WORLD COMPARISON</th>
<th>Clarion Prof.</th>
<th>DBase IV 1.0</th>
<th>Foxpro 1.0</th>
<th>Informix- SQL 2.10.08</th>
<th>Paradox 3.0</th>
<th>dBASE for DOS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Performance</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rel. Data Entry (75)</td>
<td>E</td>
<td>P</td>
<td>E</td>
<td>VG</td>
<td>E</td>
<td>E</td>
</tr>
<tr>
<td>Rel. Querying (75)</td>
<td>G</td>
<td>P</td>
<td>G</td>
<td>E</td>
<td>E</td>
<td>E</td>
</tr>
<tr>
<td>Rel. Reporting (100)</td>
<td>E</td>
<td>VG</td>
<td>VG</td>
<td>VG</td>
<td>E</td>
<td>E</td>
</tr>
<tr>
<td>Programming Lang. (100)</td>
<td>E</td>
<td>VG</td>
<td>VG</td>
<td>E</td>
<td>E</td>
<td>E</td>
</tr>
<tr>
<td>Speed of Rel. Operations (125)</td>
<td>E</td>
<td>G</td>
<td>S</td>
<td>VG</td>
<td>S</td>
<td>S</td>
</tr>
<tr>
<td>Documentation (100)</td>
<td>VG</td>
<td>S</td>
<td>E</td>
<td>E</td>
<td>E</td>
<td>E</td>
</tr>
<tr>
<td>Ease of Learning (30)</td>
<td>VG</td>
<td>P</td>
<td>G</td>
<td>VG</td>
<td>E</td>
<td>E</td>
</tr>
<tr>
<td>Ease of use (125)</td>
<td>E</td>
<td>P</td>
<td>VG</td>
<td>G</td>
<td>E</td>
<td>E</td>
</tr>
<tr>
<td>Error Handling (100)</td>
<td>E</td>
<td>U</td>
<td>S</td>
<td>VG</td>
<td>E</td>
<td>VG</td>
</tr>
<tr>
<td>Support</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Support Policies (25)</td>
<td>G</td>
<td>G</td>
<td>VG</td>
<td>S</td>
<td>VG</td>
<td>S</td>
</tr>
<tr>
<td>Technical Support (50)</td>
<td>G</td>
<td>P</td>
<td>S</td>
<td>VG</td>
<td>VG</td>
<td>VG</td>
</tr>
<tr>
<td>Value</td>
<td></td>
<td>P</td>
<td>VG</td>
<td>VG</td>
<td>E</td>
<td>E</td>
</tr>
<tr>
<td>Final Scores</td>
<td>8.0</td>
<td>4.0</td>
<td>7.7</td>
<td>7.8</td>
<td>8.5</td>
<td>8.8</td>
</tr>
</tbody>
</table>

E = Excellent = 1.0  
VG = Very Good = 0.75  
G = Good = 0.5  
P = Poor = 0.25  
S = Satisfactory = 0.5  
U = Unsatisfactory or N/A = 0.0
1. 2 billion records with 4000 characters each.
2. 255 fields with up to 255 characters per field.
3. Each table may have up to 15 associated forms and 15 reports.
4. Unlimited number of tables that may be joined in a query.
5. The Personal Programmer allows 15 tables, 15 selections per menu, and 10 levels of menus in a given application.

Development of the prototype involved a combination of all three methods. Fourteen tables were created from the original objects using the standard module. Generation of fourteen instead of the logical design of thirteen occurred because the Data Element table, representing the Data Element object (APWTDE), exceeded record capacity for a "keyed" table, 1350 bytes. Therefore, APWTDE had to be divided into two parts, APWTDE and APWTDE2, and then linked relationally in order to satisfy memory requirements. All forms, reports and queries were created in the standard module (See Appendix G).

One of the strengths of Paradox is its form generator. A form, based on a single table, may have other forms from other tables "embedded" within it. Maximum form length in Paradox 3.0 is four pages, allowing up to four embedded forms. The embedded form concept is very helpful in
maintaining the integrity of the data within the database.
In the prototype, the embedded form allowed the Qualitative Data Items and Quantitative Data Values of Reference, Data and Alias Elements to be added, edited and deleted in connection with all of the regular descriptive attributes associated with those elements. This capability helped to preserve data integrity because Values and Items could not exist without their parent elements. Without embedded forms, deletion of an element would first involve going to a separate Values or Items form, performing deletion, and then returning to the associated element and perform a deletion on it. Another strength of the form generator consisted of the ability to generate "validity checks." These validity checks enable fields to be constrained in the following ways:

1. Required Field Data Entry. Required entry exists for key fields in Reference, Data, and Alias Element tables as well as Prime and Class Word tables.

2. Field Data Format. A field can be constrained to accept only numbers or alphanumerics or variations of the two, including capitalization and use of characters.

3. Look-up Tables. Look-up tables are used to limit the domain of the content of a field. For example, Reference Elements are built from a finite list of Class Words. Thus, by pressing [F1], a look-up table of Class Words is presented to the user for selection. This function greatly preserves data integrity and
reinforces the Element naming conventions discussed in Chapter II.

4. Default Values. Default values are placed in some fields in each form. For example, if the Element Status ID field is bypassed, the field automatically shows "PR" for Proposed Element.

The forms generator was easy to use and flexible. Calculated Field functions were used to add the various modifiers, qualifiers, Prime Words and Class Words together to form Reference and Data Elements. Also, form color options and ASCII character options were available to make the forms pleasing to the eye as well as highlight important sections of the form.

Like the form generator, the report generator was available within the standard module. The report generator permitted two styles: Columnar and free form report. Both styles were used. All "list" reports were generated by the columnar option; while, the free form report style was used for the "detailed reports."

The report generator was not as user-friendly. For example, a detailed report for a Data Element does not include Qualitative Data Items or Quantitative Data Values. Therefore the Items and Values of a Data Element are reported separately. Also, report generator operations were somewhat slower than the form generator.
Queries were constructed in both the standard module and the Personal Programmer. In the standard module, Query-By-Example (QBE) methodology is used to relate tables. QBE is a simple, yet capable methodology that presents the table structure to the developer and then lets the developer link common fields and place constraints on field values in several different tables in order to derive desired information. QBE was used to link Data Values and Items to their parent elements (Data, Reference, and Alias). In the Personal Programmer, query options were more detailed. For example, in the application, if the user desires to edit a Data Element, he is first queried for the Data Element Number (De.Counter). Queries are used in almost every menu option to narrow-down and then quickly comply with the user needs. The Personal Programmer is the main applications generator which brings all of the forms, reports and queries together.

The Personal Programmer performs like a "General Contractor." It takes the parts, subcontractors, and organizes them into a structure that is cohesive and coordinated. Using a menu hierarchy structure, the Personal Programmer generates "scripts" (applications) that run much like a giant batch file. Scripts are really recorded keystrokes. However, scripts are also the "gateway" to PAL
since they are recorded in PAL and can be edited and enhanced. Scripts are interpreted by Paradox and then executed. Though slower than compiled code, Paradox 3.0 is fast when compared to similar products in the market place [Ref. 12].

A single master script was generated for the prototype. However, the script was so large that there was insufficient RAM to run it. Because of this, the master script was divided into smaller scripts which were chained together. The major script hierarchy and definition is shown in Figure 4.2. Smaller scripts are also used to perform utility functions. The advantage of scripts is that they break the prototype into more manageable modules. When an update is required, only the specific module needs to be changed.

TSR Corporation, located in New York, is currently developing a compiler for Paradox 3.0. However, a "Runtime" program is available for extra cost, through Borland Corporation, which does not increase speed, but enables applications to be run without main program support, reducing the requirement of reserving approximately five megabytes of secondary memory for Paradox 3.0.

PAL, mentioned earlier, was used to enhance the scripts. The PAL editor was used to both add code as well as subtract
unneeded code. Also, PAL helped document each of the
scripts which was beneficial in the development process.

![Diagram](image.png)

**Figure 4.2. Prototype Script Hierarchy.**

C. PROBLEMS AND BENEFITS OF PARADOX 3.0 IN IMPLEMENTATION

Although Paradox 3.0 proved to be a very capable
relational DBMS, some problems were encountered. Problems
and benefits are summarized as follows:

1. Problem. The keyed file memory limit of 1350 bytes
caused a major table to be divided into two separate
tables.

2. Problem. Selection of a Reference, Data, or Alias
Element for deletion must be done by paging through the
elements. The Personal Programmer will not permit
selection by simple query in this case.
3. Problem. Where duplicate key field instances occur, both "matched" records are placed into a "Keyviol" (Key Violation) table. Reconciliation of this duplication is a cumbersome process.

4. Problem. Because Paradox offers many flexible options in building a database system, much RAM is used (up to 640K). The method of using smaller scripts, for this reason, was not identified in the documentation.

5. Problem. Speed. Though fast compared to other relational DBMS's, Paradox 3.0 is still considered slow compared to a compiled counterpart. For example, on a 12.5 MHZ 80286 IBM Clone microcomputer, a query to edit 1 of 50 Data Element records took an average of 32 seconds to display the four-page record (with three embedded forms).

6. Problem. Mouse Support. Though not a requirement for the prototype, the use of a mouse in the development stage would have accelerated the process. Long hours in the development process led to increased keyboard-entry errors. The mouse option would have alleviated the problem somewhat.

7. Benefit. Three separate methods (Standard Module, Personal Programmer and PAL Editor) for system development.


11. Benefit. QBE methodology, used to generate queries and link relations proved to be simple and effective.

12. Benefit. Paradox 3.0 is a user-friendly and well-documented relational DBMS found to be superior in a comparison of six relational DBMS's [Ref. 14].
Overall, Paradox 3.0 benefits far outweighed the problems encountered in the development process.

D. USERS MANUAL AND SCRIPT CODE

The objective of the User's Manual is to provide a description of prototype operations at each step along the menu hierarchy. Although each screen contains basic instructions on what keys to use for certain functions, the main purpose of the manual is to provide amplification of instruction where questions on operations may arise. The manual is located in Appendix H. The code for the primary scripts shown in Figure 4.2 is located in Appendix I.

The Conclusions from development of the prototype and recommendations are provided in the following chapter.
V. CONCLUSION AND RECOMMENDATIONS

This thesis has discussed the importance of data element standardization as a foundation for standardizing Management Information Systems (MIS) used by all of the services within DOD. Data is a valuable resource that must be easily and effectively shared between the services. The interoperability of multiple MIS systems based on this standardization will create a reduction in both data and system redundancy, and result in an eventual cost savings. It will also create an increase in information sharing and more effective communication, providing a better return on dollars invested in MIS. To assist the standardization process, this thesis has identified the data requirements, the functional component requirements, the logical database design and the application design for a prototype microcomputer DBMS dictionary for standardizing, updating, viewing and storing data elements. This thesis then successfully implemented the system design and developed a prototype using a powerful relational DBMS, Paradox 3.0.

It is recommended that this prototype dictionary be evaluated by users in CIM and ODISC4 for verification and validation. Further, it is recommended that changes be
submitted to the Naval Postgraduate School Computer Technology department as a follow-on thesis topic. The "Unique Query" option, in the prototype's main menu, has been reserved for the purpose of updating user query needs. For example, the user may desire a listing of Data Elements based on Element Status (which Data Elements have been proposed, approved, etc.). Other thesis topics include:

1. Exploration of a data download capability, either by floppy disk or dial-up line, from the ADD ADSS to the prototype dictionary.

2. Design and development of an expert shell, used in conjunction with the prototype, that would enable the user to select a level of operation based on his computer skills (new user, experienced user, expert user).

3. Comparison of the prototype dictionary with any other DBMS systems that are created to help developers standardize and store Data Elements.

Because of DOD's new policy of standardizing MIS, it is important that thesis research in this area continue in order to reinforce the importance of the Data Element standardization goal.
### APPENDIX A

#### A. PRIME WORD LIST

<table>
<thead>
<tr>
<th>Rec Nbr</th>
<th>Prime Word</th>
<th>Army Data Subject-Area Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Accounting</td>
<td>Budget</td>
</tr>
<tr>
<td>2</td>
<td>Acquisition</td>
<td>Acquisition</td>
</tr>
<tr>
<td>3</td>
<td>Administration</td>
<td>Support Activities</td>
</tr>
<tr>
<td>4</td>
<td>Affair</td>
<td>Public Affairs</td>
</tr>
<tr>
<td>5</td>
<td>Agency</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Agreement</td>
<td>Contracts</td>
</tr>
<tr>
<td>7</td>
<td>Air</td>
<td>Transportation</td>
</tr>
<tr>
<td>8</td>
<td>Air-Defence</td>
<td>Operations Plans</td>
</tr>
<tr>
<td>9</td>
<td>Air-Ground</td>
<td>Operations Plans</td>
</tr>
<tr>
<td>10</td>
<td>Aircraft</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Airfield</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Airlift</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Airport</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Alert</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Ammunition</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Anchorage</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Annex</td>
<td>Facilities</td>
</tr>
<tr>
<td>18</td>
<td>Appropriated</td>
<td>Funds</td>
</tr>
<tr>
<td>19</td>
<td>Apron</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>Arctic</td>
<td>Unit(s) &amp; Org(s)</td>
</tr>
<tr>
<td>21</td>
<td>Army</td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>Arresting-Gear</td>
<td>Operations Plans</td>
</tr>
<tr>
<td>23</td>
<td>Arrival</td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>Assessment</td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>Asset</td>
<td>Security Assistance</td>
</tr>
<tr>
<td>26</td>
<td>Assistance</td>
<td>Information Management</td>
</tr>
<tr>
<td>27</td>
<td>Audio</td>
<td>Support Activities</td>
</tr>
<tr>
<td>28</td>
<td>Audit</td>
<td>Structure</td>
</tr>
<tr>
<td>29</td>
<td>Authorization</td>
<td>Information Management</td>
</tr>
<tr>
<td>30</td>
<td>Automation</td>
<td>Operations Plans</td>
</tr>
<tr>
<td>31</td>
<td>Barrier</td>
<td>Facilities</td>
</tr>
<tr>
<td>32</td>
<td>Base</td>
<td>Operations Plans</td>
</tr>
<tr>
<td>33</td>
<td>Battlefield</td>
<td>Operations Plans</td>
</tr>
<tr>
<td>34</td>
<td>Bed</td>
<td></td>
</tr>
<tr>
<td>35</td>
<td>Berth</td>
<td></td>
</tr>
<tr>
<td>36</td>
<td>Biological Operations Plans</td>
<td></td>
</tr>
<tr>
<td>37</td>
<td>Budget</td>
<td></td>
</tr>
<tr>
<td>38</td>
<td>Facilities</td>
<td></td>
</tr>
<tr>
<td>39</td>
<td>Camp</td>
<td></td>
</tr>
<tr>
<td>40</td>
<td>Capability Operations Plans</td>
<td></td>
</tr>
<tr>
<td>41</td>
<td>Cargo</td>
<td></td>
</tr>
<tr>
<td>42</td>
<td>Carrier</td>
<td></td>
</tr>
<tr>
<td>43</td>
<td>Catastrophic Crisis Operations</td>
<td></td>
</tr>
<tr>
<td>44</td>
<td>Cemetery</td>
<td></td>
</tr>
<tr>
<td>45</td>
<td>Channel</td>
<td></td>
</tr>
<tr>
<td>46</td>
<td>Chart</td>
<td></td>
</tr>
<tr>
<td>47</td>
<td>Chemical Personnel Support Activities</td>
<td></td>
</tr>
<tr>
<td>48</td>
<td>Civil</td>
<td></td>
</tr>
<tr>
<td>49</td>
<td>Civilian</td>
<td></td>
</tr>
<tr>
<td>50</td>
<td>Clinic</td>
<td></td>
</tr>
<tr>
<td>51</td>
<td>Combat</td>
<td></td>
</tr>
<tr>
<td>52</td>
<td>Command</td>
<td></td>
</tr>
<tr>
<td>53</td>
<td>Commercial Commercial Activities</td>
<td></td>
</tr>
<tr>
<td>54</td>
<td>Communication Information Management</td>
<td></td>
</tr>
<tr>
<td>55</td>
<td>Community</td>
<td></td>
</tr>
<tr>
<td>56</td>
<td>Compensation Funds</td>
<td></td>
</tr>
<tr>
<td>57</td>
<td>Complex</td>
<td></td>
</tr>
<tr>
<td>58</td>
<td>Component</td>
<td></td>
</tr>
<tr>
<td>59</td>
<td>Computer</td>
<td></td>
</tr>
<tr>
<td>60</td>
<td>Congressional Government Liaison</td>
<td></td>
</tr>
<tr>
<td>61</td>
<td>Construction Facilities</td>
<td></td>
</tr>
<tr>
<td>62</td>
<td>Container</td>
<td></td>
</tr>
<tr>
<td>63</td>
<td>Contract</td>
<td></td>
</tr>
<tr>
<td>64</td>
<td>Contractor</td>
<td></td>
</tr>
<tr>
<td>65</td>
<td>Conversion</td>
<td></td>
</tr>
<tr>
<td>66</td>
<td>Convoy</td>
<td></td>
</tr>
<tr>
<td>67</td>
<td>Counterintelligence Intelligence</td>
<td></td>
</tr>
<tr>
<td>68</td>
<td>Country</td>
<td></td>
</tr>
<tr>
<td>69</td>
<td>County</td>
<td></td>
</tr>
<tr>
<td>70</td>
<td>Craft</td>
<td></td>
</tr>
<tr>
<td>71</td>
<td>Crane</td>
<td></td>
</tr>
<tr>
<td>72</td>
<td>Crisis</td>
<td></td>
</tr>
<tr>
<td>73</td>
<td>Deception</td>
<td></td>
</tr>
<tr>
<td>74</td>
<td>Defense</td>
<td></td>
</tr>
<tr>
<td>75</td>
<td>Departure</td>
<td></td>
</tr>
<tr>
<td>76</td>
<td>Dependent</td>
<td></td>
</tr>
<tr>
<td>77</td>
<td>Deployment</td>
<td></td>
</tr>
<tr>
<td>78</td>
<td>Description</td>
<td></td>
</tr>
<tr>
<td>79</td>
<td>Developer</td>
<td></td>
</tr>
<tr>
<td>80</td>
<td>Development</td>
<td></td>
</tr>
<tr>
<td>81</td>
<td>Direction</td>
<td></td>
</tr>
</tbody>
</table>

62
<p>| 82 | Directive Guidance and Doctrine |
| 83 | Disaster Crisis Operations |
| 84 | Disbursement Funds |
| 85 | Discipline Security |
| 86 | Diseased Units(s) &amp; Org(s) |
| 87 | Document Research and Development |
| 88 | Documentation Intelligence |
| 89 | Electricity Facilities |
| 90 | Electronic Personnel |
| 91 | Encyclopedia Materiel |
| 92 | Encyclopedia Operational Testing |
| 93 | Engineering Government Liaison |
| 94 | Equal-Opportunity Government Liaison |
| 95 | Equipment Government Liaison |
| 96 | Evacuee Government Liaison |
| 97 | Evaluation Government Liaison |
| 98 | Executive Government Liaison |
| 99 | Exercise Government Liaison |
| 100 | Experiment Government Liaison |
| 101 | External Government Liaison |
| 102 | Facility Government Liaison |
| 103 | Family Government Liaison |
| 104 | Finance Government Liaison |
| 105 | Fire-Support Government Liaison |
| 106 | Force Government Liaison |
| 107 | Foreignfuel Government Liaison |
| 108 | Funds Government Liaison |
| 109 | Geographic Intelligence |
| 110 | Goal Intelligence |
| 111 | Government Unit(s) &amp; Org(s) |
| 112 | Harbor Government Liaison |
| 113 | Health Government Liaison |
| 114 | Hospital Government Liaison |
| 115 | Hostilities Government Liaison |
| 116 | Housing Government Liaison |
| 117 | Ice Personnel |
| 118 | Individual Personnel |
| 119 | Industrial Acquisition |
| 120 | Information Information Management |
| 121 | Inspection Support Activities |
| 122 | Installation Support Activities |
| 123 | Institutional Training |
| 124 | Intelligence Intelligence |
| 125 | Interheadquarter Government Liaison |
| 126 | International Government Liaison |
| 127 | Interservice Government Liaison |
| 128 | Intertheater Operations Plans |
| 129 | Intratheater Operations Plans |</p>
<table>
<thead>
<tr>
<th>Page</th>
<th>Text</th>
</tr>
</thead>
<tbody>
<tr>
<td>130</td>
<td>Inventory Materiel</td>
</tr>
<tr>
<td>131</td>
<td>Investigation Support Activities</td>
</tr>
<tr>
<td>132</td>
<td>Item Research and Development Transportation</td>
</tr>
<tr>
<td>133</td>
<td>Laboratory Security</td>
</tr>
<tr>
<td>134</td>
<td>Land Support Activities</td>
</tr>
<tr>
<td>135</td>
<td>Language Government Liaison</td>
</tr>
<tr>
<td>136</td>
<td>Law-and-Order Information Management</td>
</tr>
<tr>
<td>137</td>
<td>Legal Research and Development</td>
</tr>
<tr>
<td>138</td>
<td>Liaison Personnel</td>
</tr>
<tr>
<td>139</td>
<td>Library Personnel</td>
</tr>
<tr>
<td>140</td>
<td>Life-Science Personnel</td>
</tr>
<tr>
<td>141</td>
<td>Lighter Personnel</td>
</tr>
<tr>
<td>142</td>
<td>Local Materiel</td>
</tr>
<tr>
<td>143</td>
<td>Location Operations Plans</td>
</tr>
<tr>
<td>144</td>
<td>Logistic Facilities</td>
</tr>
<tr>
<td>145</td>
<td>Logistic Materiel</td>
</tr>
<tr>
<td>146</td>
<td>Maintenance Major-Item</td>
</tr>
<tr>
<td>147</td>
<td>Maintenance Unit(s) &amp; Org(s)</td>
</tr>
<tr>
<td>148</td>
<td>Management Operations Plans</td>
</tr>
<tr>
<td>149</td>
<td>Maneuver Structure</td>
</tr>
<tr>
<td>150</td>
<td>Manpower Intelligence</td>
</tr>
<tr>
<td>151</td>
<td>Mapping Materiel</td>
</tr>
<tr>
<td>152</td>
<td>Materiel Personnel</td>
</tr>
<tr>
<td>153</td>
<td>Medical Personnel</td>
</tr>
<tr>
<td>154</td>
<td>Member Personnel</td>
</tr>
<tr>
<td>155</td>
<td>Message Personnel</td>
</tr>
<tr>
<td>156</td>
<td>Military Personnel</td>
</tr>
<tr>
<td>157</td>
<td>Mission Personnel</td>
</tr>
<tr>
<td>158</td>
<td>Mobilization Operations Plans</td>
</tr>
<tr>
<td>159</td>
<td>Movement Operations Plans</td>
</tr>
<tr>
<td>160</td>
<td>Nation Government Liaison</td>
</tr>
<tr>
<td>161</td>
<td>National Unit(s) &amp; Org(s)</td>
</tr>
<tr>
<td>162</td>
<td>National-Guard Funds</td>
</tr>
<tr>
<td>163</td>
<td>Non-Appropriated Operation Operations Plans</td>
</tr>
<tr>
<td>164</td>
<td>Non-Evacuee Operation Operations Plans</td>
</tr>
<tr>
<td>165</td>
<td>Nuclear Operations Plans</td>
</tr>
<tr>
<td>166</td>
<td>Nuclear-Surety Intelligence</td>
</tr>
<tr>
<td>167</td>
<td>Obstacle Operations Plans</td>
</tr>
<tr>
<td>168</td>
<td>Offense Facilities</td>
</tr>
<tr>
<td>169</td>
<td>Office Operations Plans</td>
</tr>
<tr>
<td>170</td>
<td>Operation Unit(s) &amp; Org(s)</td>
</tr>
<tr>
<td>171</td>
<td>Operation Operations Plans</td>
</tr>
<tr>
<td>172</td>
<td>Organization Operations Plans</td>
</tr>
<tr>
<td>173</td>
<td>Outpatient Army Program</td>
</tr>
<tr>
<td>174</td>
<td>POM Personnel</td>
</tr>
<tr>
<td>175</td>
<td>Passenger Personnel</td>
</tr>
<tr>
<td>176</td>
<td>Patient Personnel</td>
</tr>
<tr>
<td>177</td>
<td>Personnel Personnel</td>
</tr>
<tr>
<td>Page</td>
<td></td>
</tr>
<tr>
<td>------</td>
<td></td>
</tr>
<tr>
<td>178</td>
<td>Petroleum</td>
</tr>
<tr>
<td>179</td>
<td>Physical</td>
</tr>
<tr>
<td>180</td>
<td>Pipeline</td>
</tr>
<tr>
<td>181</td>
<td>Plan</td>
</tr>
<tr>
<td>182</td>
<td>Policy</td>
</tr>
<tr>
<td>183</td>
<td>Port</td>
</tr>
<tr>
<td>184</td>
<td>Post</td>
</tr>
<tr>
<td>185</td>
<td>Printing</td>
</tr>
<tr>
<td>186</td>
<td>Priority</td>
</tr>
<tr>
<td>187</td>
<td>Prisoner</td>
</tr>
<tr>
<td>188</td>
<td>Procedure</td>
</tr>
<tr>
<td>189</td>
<td>Production</td>
</tr>
<tr>
<td>190</td>
<td>Program</td>
</tr>
<tr>
<td>191</td>
<td>Project</td>
</tr>
<tr>
<td>192</td>
<td>Protocol</td>
</tr>
<tr>
<td>193</td>
<td>Psychological</td>
</tr>
<tr>
<td>194</td>
<td>Public</td>
</tr>
<tr>
<td>195</td>
<td>Publication</td>
</tr>
<tr>
<td>196</td>
<td>Rail</td>
</tr>
<tr>
<td>197</td>
<td>Railroad</td>
</tr>
<tr>
<td>198</td>
<td>Ramp</td>
</tr>
<tr>
<td>199</td>
<td>Range</td>
</tr>
<tr>
<td>200</td>
<td>Readiness</td>
</tr>
<tr>
<td>201</td>
<td>Receipt</td>
</tr>
<tr>
<td>202</td>
<td>Reconnaissance</td>
</tr>
<tr>
<td>203</td>
<td>Record</td>
</tr>
<tr>
<td>204</td>
<td>Regulation</td>
</tr>
<tr>
<td>205</td>
<td>Relief</td>
</tr>
<tr>
<td>206</td>
<td>Religious</td>
</tr>
<tr>
<td>207</td>
<td>Report</td>
</tr>
<tr>
<td>208</td>
<td>Requirement</td>
</tr>
<tr>
<td>209</td>
<td>Research</td>
</tr>
<tr>
<td>210</td>
<td>Reservation</td>
</tr>
<tr>
<td>211</td>
<td>Reserve</td>
</tr>
<tr>
<td>212</td>
<td>Resource</td>
</tr>
<tr>
<td>213</td>
<td>Road</td>
</tr>
<tr>
<td>214</td>
<td>Runway</td>
</tr>
<tr>
<td>215</td>
<td>Safety</td>
</tr>
<tr>
<td>216</td>
<td>Sample</td>
</tr>
<tr>
<td>217</td>
<td>Science</td>
</tr>
<tr>
<td>218</td>
<td>Sea</td>
</tr>
<tr>
<td>219</td>
<td>Seaport</td>
</tr>
<tr>
<td>220</td>
<td>Security</td>
</tr>
<tr>
<td>221</td>
<td>Security-Assistance</td>
</tr>
<tr>
<td>222</td>
<td>Sequence</td>
</tr>
<tr>
<td>223</td>
<td>Service</td>
</tr>
<tr>
<td>224</td>
<td>Ship</td>
</tr>
<tr>
<td>225</td>
<td>Soldier</td>
</tr>
</tbody>
</table>
### APPENDIX B

#### A. CLASS WORD LIST

<table>
<thead>
<tr>
<th>Record Number</th>
<th>Class Word Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Acceleration</td>
</tr>
<tr>
<td>2</td>
<td>Amount</td>
</tr>
<tr>
<td>3</td>
<td>Angle</td>
</tr>
<tr>
<td>4</td>
<td>Area</td>
</tr>
<tr>
<td>5</td>
<td>Category</td>
</tr>
<tr>
<td>6</td>
<td>Code</td>
</tr>
<tr>
<td>7</td>
<td>Cost</td>
</tr>
<tr>
<td>8</td>
<td>Date</td>
</tr>
<tr>
<td>9</td>
<td>Date-Time-Group</td>
</tr>
<tr>
<td>10</td>
<td>Density</td>
</tr>
<tr>
<td>11</td>
<td>Depth</td>
</tr>
<tr>
<td>12</td>
<td>Distance</td>
</tr>
<tr>
<td>13</td>
<td>Flow</td>
</tr>
<tr>
<td>14</td>
<td>Height</td>
</tr>
<tr>
<td>15</td>
<td>Humidity</td>
</tr>
<tr>
<td>16</td>
<td>Identifier</td>
</tr>
<tr>
<td>17</td>
<td>Latitude</td>
</tr>
<tr>
<td>18</td>
<td>Length</td>
</tr>
<tr>
<td>19</td>
<td>Location</td>
</tr>
<tr>
<td>20</td>
<td>Longitude</td>
</tr>
<tr>
<td>21</td>
<td>Mass</td>
</tr>
<tr>
<td>22</td>
<td>Name</td>
</tr>
<tr>
<td>23</td>
<td>Number</td>
</tr>
<tr>
<td>24</td>
<td>Power</td>
</tr>
<tr>
<td>25</td>
<td>Pressure</td>
</tr>
<tr>
<td>26</td>
<td>Quantity</td>
</tr>
<tr>
<td>27</td>
<td>Range</td>
</tr>
<tr>
<td>28</td>
<td>Size</td>
</tr>
<tr>
<td>29</td>
<td>Temperature</td>
</tr>
<tr>
<td>30</td>
<td>Tension</td>
</tr>
<tr>
<td>31</td>
<td>Text</td>
</tr>
<tr>
<td>32</td>
<td>Time</td>
</tr>
<tr>
<td>33</td>
<td>Torque</td>
</tr>
<tr>
<td>34</td>
<td>Velocity</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>35</td>
<td>Viscosity</td>
</tr>
<tr>
<td>36</td>
<td>Volume</td>
</tr>
<tr>
<td>37</td>
<td>Weight</td>
</tr>
<tr>
<td>38</td>
<td>Width</td>
</tr>
<tr>
<td>39</td>
<td>Year</td>
</tr>
</tbody>
</table>
APPENDIX C

A. AR 25-9 Naming Conventions

1. Rule 1

A reference element name will contain one and only one class word. Comment: In this way, the standard element is formulated to describe only one type of information collected about an object.

2. Rule 2

Class words will be reserved; that is, they will not be used as modifiers, qualifiers or prime words.

3. Rule 3

Each data element will contain one designated prime word and describe only one concept. Comment: Having only one prime word, the data element is explicitly formulated to describe only one concept.

4. Rule 4

The sequence of words in a data element will be as follows: modifier(s) (if required), prime words, modifier(s) (if required), class word, qualifier(s) (if required).
5. Rule 5

Each data element name will include its reference element name.

6. Rule 6

Plurals of class words or prime words are not permitted. Comment: Removing plurals from data element names encourages the designer to think in terms of primitive concepts and increases the possibility that two people will develop the same name to describe identical concepts.

7. Rule 7

Modifiers and qualifiers will be used to describe a standard element fully. Six modifiers per prime word and one modifier with two qualifiers per class word are allowed.

8. Rule 8

The word order of commonly used terms will be preserved in data element alias names (for example Port of debarkation and Department of Defense).

9. Rule 9

A unit of measure suffix may be added to the names of all elements that describe a numeric quantity (for example Volume-in-Liters).

10. Rule 10
No abbreviations or acronyms are permitted in the standard element name. Comment: Abbreviations and acronyms would reduce the clarity of the standard element name.

11. **Rule 11**

Only alphabetic characters (A-Z) are permitted in standard element names. Comment: There are two exceptions to Rule 11: (1) a hyphen may be used to connect the words in a prime term or reference element name; (2) a number may be used when it is part of a descriptive name (for example, M109A3 Howitzer). Comment: Permitting only alphabetic characters encourages standard element developers to name standard elements in terms of what the data are and not how they are stored or used. This rule also increases the probability that different people will develop the same name for identical standard elements.

12. **Rule 12**

Names of organizations, computer or information systems, directives, forms, screens, or reports are not permitted in standard element names.

13. **Rule 13**

Titles of blocks, rows, or columns of screens, reports, or listings are not permitted in standard element names unless those titles satisfy rules 1-11.
APPENDIX D

```
APWTRELM

APWTREQL

APWTREGD

APWTREFD

APWTCHQR

NOTES:

APWTREQL = Ref Elmnt Data Value Number
APWTREFD = Ref Elmnt Data Item
APWTDE = Data Element
APWTCHQR = Class Word

72
```
<table>
<thead>
<tr>
<th>De_Count</th>
<th>De_Type_ID</th>
<th>De_Name</th>
<th>Modifier_1</th>
<th>Modifier_12</th>
<th>De_Ver_Nbr</th>
<th>De_Creator_ID</th>
<th>Elm_Status_ID</th>
<th>Elm_Appvl_Dte</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

```
De_Ver_Nbr
De_Creator_ID
Elm_Status_ID
Elm_Appvl_Dte
Elm_Mod_Dte
Area_Rvw_ST
De_Mnmlc_Abb
Elm_Adoc_Nme
De_Resp_OFC_Nme
Elc_ID
De_Secu_Cat
Elm_Std_Auth_ID
De_Timeess_ID
Elm_Max_Dv_Lgthchr
QI_Dv_Acry_Nbrpct
Qn_Lrng_nbr
Qn_Hrng_nbr
```

<table>
<thead>
<tr>
<th>Qn_Scale_Nbr</th>
<th>Qn_Acry_ID</th>
<th>Elm_Def_txt</th>
<th>Elm_Dom_Def_txt</th>
<th>Elm_Dv_List_txt</th>
<th>Elm_Cmt_txt</th>
<th>De_Calc_Fmla_txt</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

```
APWTIC
APWTRELW
APWTAL
APWTDEDI
APWTDEQO
APWTPWOR
```

**Note:**

- APWTRELW = Ref Elmnt
- APWTAL = Alias
- APWTDEDI = Data Elmnt Data Item
- APWTDEQO = Data Elmnt Data Value
- APWTPWOR = Prime Word

73
Note:
APWTIC - Info Class
| APWTALDI | MV | APWTALQD | MV | APWTSB | MV | APWTALDE |

| APWTAL |

**Elm_Dv_Nm**

**Elm_Dv_Def_Txt**

**APWTAL**

**Elm_Dv_Nm**

**Elm_Dv_Def_Txt**

**APWTALDI**

**Qn_Dv_Nbr**

**Elm_Dv_Def_Txt**

**APWTALQD**

**Doe_Host_App_Nm**

**Doe_Host_Sys_Nm**

**Doe_Int_FMT_Cat**

**Doe_Resp_Ofc_Nm**

**APWTAL**

**Note:**

APWTALDI = Alias Data Val Name

APWTALQD = Alias Data Value Number

APWTSB = Alias System

APWTAL = Alias

75
A. DOMAIN DEFINITION AND DESCRIPTION OF OBJECT PROPERTIES

Object properties are actual Data Elements within the prototype dictionary.

Record Number: 1

De_Count Ver Nbr Mnemonic ID Data Val ID Lngth
1 1 Relm-Nme QL 80

Data Element Name

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

Information Reference Element Name

Element Definition Text

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

A character string given to a reference element based on a class word that identifies a domain. (See comment text).

Domain Definition Text

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

A generic domain comprised of the following ASCII characters: A - Z; Hyphen (-); and Underscore (_).
Record Number: 2

Data Element Name

Information Data Value Type Identifier

Element Definition Text

An indication of the data value type of an information element.

Domain Definition Text

A specific domain comprised of the following qualitative data values: QN = Quantitative Data; QL = Qualitative Data.

Record Number: 3

Data Element Name

Information Data Value Type Identifier

Element Definition Text

An indication of the data value type of an information element.

Domain Definition Text

A specific domain comprised of the following qualitative data values: QN = Quantitative Data; QL = Qualitative Data.
A character string from a reserved word list that identifies the reference element domain.

A specific domain comprised of the qualitative data values listed in appendix I of AR 25-9.

Record Number: 4

De_Count Ver Nbr Mnemonic ID Data Val ID Lngth

| 4 | 1 | Elm-Mod_nme-xx | QL | 27 |

A character string that further describes a characteristic of an object, a relationship between
objects, or the object itself.

Domain Definition Text

A generic domain comprised of the following ASCII characters: A-Z, Hyphen (-); and Underscore (_).

Record Number: 5

<table>
<thead>
<tr>
<th>De_Count</th>
<th>Ver Nbr</th>
<th>Mnemonic ID</th>
<th>Data Val ID</th>
<th>Lngth</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>1</td>
<td>Relm-Qlf-Nme-xx</td>
<td>QL</td>
<td>15</td>
</tr>
</tbody>
</table>

Data Element Name

Information Reference Element Qualifier Name

Element Definition Text

A character string that modifies a class word. It is normally associated with quantities.

Domain Definition Text

A generic domain comprised of the following ASCII characters: A-Z; Hyphen (-); and Underscore (_).
<table>
<thead>
<tr>
<th>De_Count</th>
<th>Ver Nbr</th>
<th>Mnemonic ID</th>
<th>Data Val ID</th>
<th>Lngth</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>1</td>
<td>Elm-Dtype-Cat</td>
<td>QL</td>
<td>16</td>
</tr>
</tbody>
</table>

Data Element Name

Information Element Data Type Category

Element Definition Text

The editing type of the data values associated with the element.

Domain Definition Text

A generic domain comprised of the following qualitative data values: Bit-String; Integer; Character-String; Fixed-Point; Floating-Point.
Data Element Name
-----------------

Information Element Definition Text

Element Definition Text
-----------------
Narrative describing the organizational context or the meaning of an information element.

Domain Definition Text
-----------------
A generic domain comprised of the characters in the ASCII graphic character set.

Record Number: 8

De_Count  Ver Nbr  Mnemonic ID  Data Val ID  Lngth
---------  ------  ----------  ----------  -----  
8        1  Elm-Dom-Def-Txt  QL  468

Data Element Name
-----------------

Information Element Domain Definition Text

Element Definition Text
-----------------
Narrative describing the acceptable set of data values for a specific information element.
Domain Definition Text

-----------------------------------
A generic domain comprised of the characters in the ASCII graphic character set.

Record Number: 9

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

De_Count Ver Nbr Mnemonic ID Data Val ID Lngth
------- ----- -------------- ---------- ------
9 1 Elm-Cmt-Txt QL 468

Data Element Name

----------------------
Information Element Comment Text

Element Definition Text

----------------------
An administrative narrative regarding a reference element, data element or data element alias.

Domain Definition Text

----------------------
A generic domain comprised of the characters in the ASCII graphics character set.
### Record Number: 10

<table>
<thead>
<tr>
<th>De_Count</th>
<th>Ver Nbr</th>
<th>Mnemonic ID</th>
<th>Data Val ID</th>
<th>Lngth</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>1</td>
<td>Elm-Max-Dv-Lgthchr</td>
<td>QN</td>
<td>4</td>
</tr>
</tbody>
</table>

**Data Element Name**

**Information Element Maximum Data Value Length**

**Characters**

**Element Definition Text**

The maximum number of characters an information element data value may contain.

**Domain Definition Text**

A specific domain of quantitative data values ranging from 0001 to 9999.

### Record Number: 11

<table>
<thead>
<tr>
<th>De_Count</th>
<th>Ver Nbr</th>
<th>Mnemonic ID</th>
<th>Data Val ID</th>
<th>Lngth</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>1</td>
<td>Elm-Just-Cat</td>
<td>7</td>
<td></td>
</tr>
</tbody>
</table>

83
<table>
<thead>
<tr>
<th>Data Element Name</th>
<th>Information Element Justification Category</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Element Definition Text</strong></td>
<td>-</td>
</tr>
<tr>
<td>The positional justification of data values within a storage field.</td>
<td>-</td>
</tr>
<tr>
<td><strong>Domain Definition Text</strong></td>
<td>-</td>
</tr>
<tr>
<td>A specific domain comprised of the following qualitative data values: Left; Right.</td>
<td>-</td>
</tr>
</tbody>
</table>

**Record Number:** 12

<table>
<thead>
<tr>
<th>De_Count</th>
<th>Ver Nbr</th>
<th>Mnemonic ID</th>
<th>Data Val ID</th>
<th>Lngth</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>1</td>
<td>Elm-Std-Auth-ID</td>
<td>QL</td>
<td>4</td>
</tr>
</tbody>
</table>

**Data Element Name**

<table>
<thead>
<tr>
<th>Information Element Standardization Authority Identifier</th>
</tr>
</thead>
<tbody>
<tr>
<td>84</td>
</tr>
</tbody>
</table>
Element Definition Text
----------------------
The branch of service, Government, or international organization that approved the element.

Domain Definition Text
----------------------
A specific domain comprised of the following qualitative data values: ANSI, NIST, ISO, DA, OJCS, NATO, DOD.

Record Number: 13

<table>
<thead>
<tr>
<th>De_Count</th>
<th>Ver Nbr</th>
<th>Mnemonic ID</th>
<th>Data Val ID</th>
<th>Lngth</th>
</tr>
</thead>
<tbody>
<tr>
<td>13</td>
<td>1</td>
<td>Elm-Adoc-Nme</td>
<td>QL</td>
<td>30</td>
</tr>
</tbody>
</table>

Data Element Name
------------------

Information Element Authorization Document Name

Element Definition Text
----------------------
A character-string given to the document (regulation, publication, document, or other) that authorizes a reference or data element.
Domain Definition Text

A generic domain comprised of the following ASCII characters: A-Z; Hyphen (-); Underscore (_); Point (.) and 0-9.

Record Number: 14

<table>
<thead>
<tr>
<th>De_Count</th>
<th>Ver Nbr</th>
<th>Mnemonic ID</th>
<th>Data Val ID</th>
<th>Lngth</th>
</tr>
</thead>
<tbody>
<tr>
<td>14</td>
<td>1</td>
<td>Elm-Dv-List-Txt</td>
<td>QL</td>
<td>312</td>
</tr>
</tbody>
</table>

Data Element Name

Information Data Value Source List Text

Element Definition Text

The source in which lengthy code lists are enumerated for the user. This source can either be a manual or automated medium.

Domain Definition Text

A generic domain comprised of the characters in the ASCII graphic character set.
Record Number: 15

<table>
<thead>
<tr>
<th>De_Count</th>
<th>Ver Nbr</th>
<th>Mnemonic ID</th>
<th>Data Val ID</th>
<th>Lngth</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>1</td>
<td>Elm-Dv-Nme</td>
<td>QL</td>
<td>35</td>
</tr>
</tbody>
</table>

Data Element Name

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

Information Element Data Value Name

Element Definition Text

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

An occurrence of a character string given to an acceptable data value.

Domain Definition Text

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

A generic domain comprised of the following ASCII characters: A-Z, -, ., 0-9, /, _, &.

Record Number: 16

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

<table>
<thead>
<tr>
<th>De_Count</th>
<th>Ver Nbr</th>
<th>Mnemonic ID</th>
<th>Data Val ID</th>
<th>Lngth</th>
</tr>
</thead>
<tbody>
<tr>
<td>16</td>
<td>1</td>
<td>Elm-Dv-Def-Txt</td>
<td>QL</td>
<td>200</td>
</tr>
</tbody>
</table>

87
Data Element Name

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

Information Element Data Value Definition Text

Element Definition Text

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

Narrative describing the meaning of a specific data value.

Domain Definition Text

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

A generic domain of the characters in the ASCII graphic character set.

Record Number:  17

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

De_Count Ver Nbr Mnemonic ID Data Val ID Lngth

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

17 1   Qn-Hrng-Nbr   QL  15

Data Element Name

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

Information Quantitative Data High-Range

Number
Element Definition Text

A character string indicating the largest value for quantitative data, when a domain set is expressed as a range of acceptable values.

Domain Definition Text

A generic domain comprised of the ASCII characters: 0-9, point (.), and minus (-).

Record "umber: 18

```
<table>
<thead>
<tr>
<th>De_Count</th>
<th>Ver Nbr</th>
<th>Mnemonic ID</th>
<th>Data Val ID</th>
<th>Lngth</th>
</tr>
</thead>
<tbody>
<tr>
<td>18</td>
<td>1</td>
<td>Qn-Lrng- Nbr</td>
<td>QL</td>
<td>15</td>
</tr>
</tbody>
</table>
```

Data Element Name

Information Quantitative Data Low-Range Number

Element Definition Text

A character string indicating the smallest value for quantitative data when, when a domain set is expressed as a range of acceptable values.
Domain Definition Text
-----------------------

A generic domain comprised of the ASCII characters 0-9, point (.), and minus (-).

Record Number: 19

De_Count Ver Nbr Mnemonic ID Data Val ID Lngth
-------- ------ -------------- ----------- ------
19 1 Qn-Scale-Nbr QL 2

Data Element Name
------------------
Information Quantitative Data Scale Number

Element Definition Text
-----------------------

A character string indicating the integer that determines the decimal point placement in an element for a fixed point data type.

Domain Definition Text
-----------------------

A generic domain comprised of the ASCII characters 0-9 and decimal point (.)

90
Record Number: 20

<table>
<thead>
<tr>
<th>De_Count</th>
<th>Ver Nbr</th>
<th>Mnemonic ID</th>
<th>Data Val ID</th>
<th>Lngth</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>1</td>
<td>Qn-Dv-Nbr</td>
<td>QL</td>
<td>35</td>
</tr>
</tbody>
</table>

Data Element Name
-------------------
Information Quantitative Data Value Number

Element Definition Text
-----------------------
A character string which represents the numerical values used when mathematical operations must be performed on qualitative data.

Domain Definition Text
-----------------------
A generic domain comprised of the ASCII characters 0-9 and decimal point (.)

Record Number: 21

<table>
<thead>
<tr>
<th>De_Count</th>
<th>Ver Nbr</th>
<th>Mnemonic ID</th>
<th>Data Val ID</th>
<th>Lngth</th>
</tr>
</thead>
<tbody>
<tr>
<td>21</td>
<td>1</td>
<td>De-Nme</td>
<td>QL</td>
<td>250</td>
</tr>
</tbody>
</table>

91
Data Element Name

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

Information Data Element Name

Element Definition Text

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

A character string given to a data element based on the prime term and a reference element name.

Domain Definition Text

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

A generic domain comprised of the ASCII characters A-Z, Hyphen (-), and Underscore (_).

Record Number: 22

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

De_Count Ver Nbr Mnemonic ID Data Val ID Lnghth

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

22 1 Pworבניe QL 27

Data Element Name

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

Information Prime Word Name

Element Definition Text

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

A character string in a data element name that represents the data grouping to which the data element belongs.
Domain Definition Text
-----------------------
A specific domain comprised of the qualitative data values listed in Appendix J (Figure J-2) of AR 25-9.

Record Number: 23

----------------------------------
De_Count  Ver Nbr  Mnemonic ID  Data Val ID  Lngth
-------  ------  -----------  --------  ------
23       1      De-Mnmonic-Abb  QL       18

Data Element Name
------------------
Information Data Element Mnemonic, Identifier

Element Definition Text
-----------------------
A short form of data element character string.

Domain Definition Text
-----------------------
A generic domain comprised of the ASCII characters A-Z, Hyphen (-), Underscore (_), slash (/), left Paren "(" , and right Paren ")".

93
Record Number: 24

De_Count Ver Nbr Mnemonic ID Data Val ID Lngth
------------- ----------- -------------- --------------
24 1 De-resp-Ofc-Nme QL 250

Data Element Name
-------------------
Information Data Element Responsible Office Name
Element Definition Text
-------------------
A character string given to the office and/or person designated by the information class proponent as the functional expert for defining, reviewing, and updating a data element and its attributes.

Domain Definition Text
-------------------
A generic domain comprised of the ASCII characters A-Z, Hyphen (-), Underscore (_), point (.), and 0-9.
Data Element Name

Information Data Element Security Category

Element Definition Text

The level of security required by the realization of a data element's structure and data values in some physical media or representation.

Domain Definition Text

A specific domain comprised of the qualitative data values listed under the definition of Qualitative data values for De-Secu-Cat.
Data Element Name

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

Information Class Identifier

Element Definition Text

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

An indication of the information class within the current HQDA Information Model.

Domain Definition Text

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

A specific domain comprised of qualitative data values ranging from 001-066. See Appendices C and J for a list of information classes which corresponds to these identifiers.

Record Number: 27

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

De_Count Ver Nbr Mnemonic ID Data Val ID Lngth

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

27 1 Ic-Nme QL 40

Data Element Name

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

Information Class Name

96
Element Definition Text

A character string given to the class of information with which a data element is assigned in accordance with the current HQDA Information Model.

Domain Definition Text

A specific domain comprised of the qualitative data values listed in Appendix C and J of AR 25-9.

Record Number: 28

De_Count Ver Nbr Mnemonic ID Data Val ID Lngth

28 1 Daarch-Sa-Nme QL 30

Data Element Name

Information Army Data Architecture Subject-Area Name

Element Definition Text

A character string given to an Army data architecture subject-area.
Domain Definition Text

A specific domain comprised of the qualitative data values listed in Appendix D of AR 25-9.

Record Number: 29

De_Count  Ver Nbr  Mnemonic ID  Data Val ID  Lngth
--------  ------  -----------  ---------  -----  
     29     1     Ic-Propnt-Nme       QL        10

Data Element Name

Information Class Proponent Name

Element Definition Text

A character string which designates an organization that has been assigned responsibility for an information class within the current HQDA Information Model.

Domain Definition Text

A specific domain comprised of the qualitative data values listed in Appendix J of AR 25-9.
Record Number: 30

<table>
<thead>
<tr>
<th>De_Count</th>
<th>Ver Nbr</th>
<th>Mnemonic ID</th>
<th>Data Val ID</th>
<th>Lngth</th>
</tr>
</thead>
<tbody>
<tr>
<td>30</td>
<td>1</td>
<td>In-Proc-Nme</td>
<td>QL</td>
<td>50</td>
</tr>
</tbody>
</table>

**Data Element Name**

**Information Process Name**

**Element Definition Text**

A designation for an object expressed in a word or words.

**Domain Definition Text**

A specific domain comprised of the qualitative data values listed in Appendix C of AR 25-9.

Record Number: 31

<table>
<thead>
<tr>
<th>De_Count</th>
<th>Ver Nbr</th>
<th>Mnemonic ID</th>
<th>Data Val ID</th>
<th>Lngth</th>
</tr>
</thead>
<tbody>
<tr>
<td>31</td>
<td>1</td>
<td>De-Timness-ID</td>
<td>QL</td>
<td>3</td>
</tr>
</tbody>
</table>

99
Data Element Name

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

Information Data Element Timeliness

Identifier

Element Definition Text

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

An indication of how often data values must be updated.

Domain Definition Text

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

A specific domain comprised of qualitative values found in the "Qualitative Data Values name and definition section - next page.

Record Number: 32

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

De_Count  Ver Nbr  Mnemonic ID  Data Val ID  Lngth

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

32          1       Ql-Dv-Acry-Nbrpct   QL        6

Data Element Name

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

Information Qualitative Data Value Accuracy

Number Percent

100
Element Definition Text
------------------------

A character string indicating how accurate a qualitative data value must be.

Domain Definition Text
------------------------

A specific domain comprised of qualitative data values 0-9 and a point (.) expressing a percent range ranging from 0.01 to 100.00.

Record Number: 33

De_Count  Ver Nbr  Mnemonic ID      Data Val ID      Lngth
---------  -------  -------------       ------------  -----  
         33    i       Qn-Acry-ID      QL          2

Data Element Name
------------------------

Information Quantitative Data Accuracy

Identifier

Element Definition Text
------------------------

A character string indicating how accurate a quantitative data value must be.
Domain Definition Text
-----------------------

A specific domain comprised of the qualitative data values found in the "Qualitative Data Value names and definitions" section - on the next page.

Record Number: 34

----------------------------------------
De_Count  Ver Nbr  Mnemonic ID  Data Val ID  Lngth
--------  ------  ---------  --------  ----
  34      1     De-Calc-Fmla-Txt  QL  250

Data Element Name

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

Information Data Element Calculation Formula

Text

Element Definition Text
-----------------------

Narrative expressing the algorithmic formula for a data element that is derived.

Domain Definition Text
-----------------------

A generic domain comprised of the characters in the ASCII graphic character set.
<table>
<thead>
<tr>
<th>Record Number:</th>
<th>35</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>De_Count</th>
<th>Ver Nbr</th>
<th>Mnemonic ID</th>
<th>Data Val ID</th>
<th>Lngth</th>
</tr>
</thead>
<tbody>
<tr>
<td>35</td>
<td>1</td>
<td>Dea-Nme</td>
<td>QL</td>
<td>250</td>
</tr>
</tbody>
</table>

**Data Element Name**

<table>
<thead>
<tr>
<th>Information Data Element Alias</th>
<th>Name</th>
</tr>
</thead>
</table>

**Element Definition Text**

A character string given to a nonstandard data element.

**Domain Definition Text**

A generic domain comprised of the ASCII characters A-Z; Hyphen (-); Underscore (_); Point (.), and 0-9.

---

<table>
<thead>
<tr>
<th>Record Number:</th>
<th>36</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>De_Count</th>
<th>Ver Nbr</th>
<th>Mnemonic ID</th>
<th>Data Val ID</th>
<th>Lngth</th>
</tr>
</thead>
<tbody>
<tr>
<td>36</td>
<td>1</td>
<td>Dea-Host-App-Nme</td>
<td>QL</td>
<td>100</td>
</tr>
</tbody>
</table>

103
### Data Element Name

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

**Information Data ElementAlias Host Application Name**

**Element Definition Text**

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

A character string given to an application/program that contains a data element alias.

**Domain Definition Text**

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

A generic domain comprised of the ASCII characters A-Z; Hyphen (-); Underscore (_); Point (.); and 0-9.

**Record Number:** 37

<table>
<thead>
<tr>
<th>De_Count</th>
<th>Ver Nbr</th>
<th>Mnemonic ID</th>
<th>Data Val ID</th>
<th>Lngth</th>
</tr>
</thead>
<tbody>
<tr>
<td>37</td>
<td>1</td>
<td>Dea-Host-Sys-Nme</td>
<td>QL</td>
<td>100</td>
</tr>
</tbody>
</table>

### Data Element Name

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

**Information Data Element Alias Host System Name**
Element Definition Text
------------------------
A character string given to an information system on which the application/program that contains a data element alias runs.

Domain Definition Text
------------------------
A generic domain comprised of the ASCII characters A-Z; Hyphen (-); Underscore (_); Point (.) and 0-9.

Record Number: 38

<table>
<thead>
<tr>
<th>De_Count</th>
<th>Ver Nbr</th>
<th>Mnemonic ID</th>
<th>Data Val ID</th>
<th>Lngth</th>
</tr>
</thead>
<tbody>
<tr>
<td>33</td>
<td>1</td>
<td>Dea-Resp-Ofc-Nme</td>
<td>QL</td>
<td>250</td>
</tr>
</tbody>
</table>

Data Element Name
--------------------

Information Data Element Alias Responsible

Office Name

Element Definition Text
------------------------
A character string given to the office and/or person designated by the information class proponent as the functional expert for defining, reviewing, and updating a
data element alias and its attributes.

Domain Definition Text

A generic domain comprised of the ASCII characters A-Z; Hyphen (-), Underscore (_); Point (.) and 0-9.

Record Number: 39

<table>
<thead>
<tr>
<th>De_Count</th>
<th>Ver Nbr</th>
<th>Mnemonic ID</th>
<th>Data Val ID</th>
<th>Lngth</th>
</tr>
</thead>
<tbody>
<tr>
<td>39 1</td>
<td>Dea-Int-Fmt-Cat</td>
<td>QL</td>
<td>12</td>
<td></td>
</tr>
</tbody>
</table>

Data Element Name

Information Data element Alias Internal Format

Category

Element Definition Text

The internal storage format of a data element alias on the parent host/application.

Domain Definition Text

A specific domain comprised of following qualitative data values: ASCII, EBCDIC, BINARY, DECIMAL, PACKED, COMPRESSED, DOUBLE.
Record Number: 40

De_Count   Ver Nbr   Mnemonic ID   Data Val ID   Lngth
-----------  --------  -------------  -------------  ----
40          1        Elm-Ver-Nbr   QL             5

Data Element Name
-------------------

Information Element Version Number

Element Definition Text
------------------------

An increasing ordinal representation of changes to a standard element.

Domain Definition Text
----------------------

A generic domain comprised of the ASCII characters 0-9 and point (.) in the format VV.MM where VV can be a positive integer value and MM can be a positive integer value. VV registers the current version number and MM

Record Number: 41

De_Count   Ver Nbr   Mnemonic ID   Data Val ID   Lngth
-----------  --------  -------------  -------------  ----
41          1        Elm-Status-ID   QL             2

107
Data Element Name

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

Information Element Status       Identifier

Element Definition Text

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

An indication of the current status of a reference or data element in relation to the standardization process.

Domain Definition Text

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

A specific domain comprised of the following qualitative data values: PR=PROPOSED; CA=CANDIDATE; AF=APPROVED FUNCTIONALLY: AP=APPROVED; IN=INSTALLED; AR=ARCHIVED.

Record Number: 42

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

De_Count    Ver Nbr    Mnemonic ID    Data Val ID    Lngth
-----------    -------    -----------    -----------    ------
    42        1        Elm-Cntr-ID      QL          9

Data Element Name

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

Information Element Counter       Identifier

108
Element Definition Text
-------------------------------------
A unique number assigned to each reference element and data element.

Domain Definition Text
-------------------------------------
A specific domain comprised of a set of unique numbers assigned to a reference or data element.

Record Number: 43
-------------------------------------
De_Count Ver Nbr Mnemonic ID Data Val ID Lngth
-------- ------- -------------- ------- ------
  43  1 Tech-Rev-Status-ID QL  2

Data Element Name
----------------------
Information Technical Review Status Identifier

Element Definition Text
-------------------------------------
The status of an element after the technical review has been performed.
Domain Definition Text

A specific domain comprised of the following qualitative data values: DT=DISAPPROVED TECHNICALLY; AT=APPROVED TECHNICALLY.

Record Number: 44

De_Count Ver Nbr Mnemonic ID Data Val ID Lngth
--------------- ----------------- ------------------ -----
44 1 Elm-Appvl-Date QN 8

Data Element Name

------------------
Information Element Approval Date

Element Definition Text

------------------
The date a standard element is approved as an Army standard.

Domain Definition Text

------------------
A specific domain of quantitative data values ranging from 19890627 to 20201231.
Record Number: 45

De_Count Ver Nbr Mnemonic ID Data Val ID Lngth
--------- ------ ----------- ----------- -----
  45    1   Elm-Mod-Date QN     8

Data Element Name
-------------------
Information Element Modification Date

Element Definition Text
-----------------------
The date a change to a standard element is approved.

Domain Definition Text
-----------------------
A specific domain of quantitative data values ranging from 19890627 to 20201231.

Record Number: 46

De_Count Ver Nbr Mnemonic ID Data Val ID Lngth
--------- ------ ----------- ----------- -----
  46    1   Elm-Instln-Date QN     8

Data Element Name
-------------------
Information Element Installation Date

111
Element Definition Text

The date designated by a responsible Army authority, after which use of the standard information element is a mandatory requirement in support of all Army information exchange requirements within the scope of AR 25-9.

Domain Definition Text

A specific domain of quantitative data values ranging from 19890627 to 20201231.

Record Number: 47

De_Count Ver Nbr Mnemonic ID Data Val ID Lngth
47 1 Elm-Archvl-Date QN 8

Data Element Name

Information Element Archival Date

Element Definition Text

The date designated by a responsible Army Authority, after which use of the standard information element is no longer required in support of all Army information
exchange requirements within the scope of AR 25-9.

Domain Definition Text

A specific domain of quantitative data values ranging from 19890627 to 20201231.

Record Number: 48

<table>
<thead>
<tr>
<th>De_Count</th>
<th>Ver Nbr</th>
<th>Mnemonic ID</th>
<th>Data Val ID</th>
<th>Lngth</th>
</tr>
</thead>
<tbody>
<tr>
<td>48</td>
<td>1</td>
<td>Elm-ID</td>
<td>QL</td>
<td>1</td>
</tr>
</tbody>
</table>

Data Element Name

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

Information Element Type    Identifier

Element Definition Text

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

An indication of the class of element.

Domain Definition Text

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

A specific domain comprised of the following qualitative data values: R=REFERENCE ELEMENT; D=DATA ELEMENT.
Record Number: 49

<table>
<thead>
<tr>
<th>De_Count</th>
<th>Ver Nbr</th>
<th>Mnemonic ID</th>
<th>Data Val ID</th>
<th>Lngth</th>
</tr>
</thead>
<tbody>
<tr>
<td>49</td>
<td>1</td>
<td>Elm-Rev-Act-ID</td>
<td>QL</td>
<td>1</td>
</tr>
</tbody>
</table>

Data Element Name

Information Element Review Action Identifier

Element Definition Text

The documented decision of a responsible Army authority to approve or disapprove a reference or data element.

Domain Definition Text

A specific domain comprised of the following qualitative data values: A=APPROVED; D=DISAPPROVED.

Record Number: 50

<table>
<thead>
<tr>
<th>De_Count</th>
<th>Ver Nbr</th>
<th>Mnemonic ID</th>
<th>Data Val ID</th>
<th>Lngth</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td>1</td>
<td>Elm-Revr-Cmt-Txt</td>
<td>QL</td>
<td>9999</td>
</tr>
</tbody>
</table>

114
Data Element Name
--------------------------------------------------
Information Element Reviewer Comment Text
Element Definition Text
--------------------------------------------------
A narrative which provides remarks pertinent to the evaluation of a candidate element.
Domain Definition Text
--------------------------------------------------
A generic domain comprised of the characters in the ASCII graphic character set.
APPENDIX F

1. APWTRELM: Reference Element

The key field is Relm_counter and the foreign property that constitutes a 1:N link from APWTCHOR to APWTRELM is Elm_clwd_nme. Relm_counter participates as a foreign key and 1:N relationships with APWTREFD, APWTREQD, and APWTDE.

2. APWTREQD: Reference Element Data Value Number

The primary key field is Elm_dv_nme and the foreign key is Relm_counter. APWTREQD is the "N" in a 1:N relationship with APWTRELM.

3. APWTREFD: Reference Element Item

The primary key field is Qn_dv_nbr and the foreign key is Relm_counter. APWTREQD is the "N" in a 1:N relationship with APWTRELM.

4. APWTCHOR: Class Word

The key field is Elm_clwd_nme and is the "1" in a 1:N relationship with APWTRELM.

5. APWTDDE: Data Element

The key field is De_counter. Foreign properties that provide a link are Relm_counter, Prwd_nme, and Ic_id.
APWTDE acts as the "N" with APWTFWOR and APWTIC and acts as the "1" with APWTDEQD and APWTDEDI.

6. APWTDEQD: Data Element Data Value Number
   The primary key field is Qn_dv_nbr and the foreign key is De_counter. APWTDEQD is the "N" in a 1:N relationship with APWTDE.

7. APWTDEDI: Data Element Data Item
   The primary key field is Elm_dv_nme and the foreign key is De_counter. APWTDEDI is the "N" in a 1:N relationship with APWTDE.

8. APWTAL: Alias Element
   The key field is Al_counter. De_counter is a foreign property constitutes a 1:N link with APWTDE. Al_counter is the foreign key for and acts as the "1" in a 1:N relationship with APWTALDI, APWTALQD, and APWTSS.

9. APWTALQD: Alias Data Value Number
   The primary key is Qn_dv_nbr and the foreign key is Al_counter. APWTALQD acts as the "N" in a 1:N relationship with APWTAL.

10. APWTALDI: Alias Data Value Name
    The primary key is Elm_dv_nme and the foreign key is Al_counter. APWTALDI acts as the "N" in a 1:N relationship with APWTAL.
11. **APWTSS: Alias Host System**

The primary key is Dea_host_app_nme and the foreign key is Al_counter. APWTSS acts as the "N" in a 1:N relationship with APWTAL.

12. **APWTPIWOR: Prime Word**

The key field is Prwd_nme and is the "1" in a 1:N relationship with APWTDE. The Daarch_sa_nme attribute acts as a foreign property link and 1:N relationship with APWTIC.

13. **APWTIC: Information Class**

The key field is Ic_id. Daarch_sa_nme is a foreign property and link in a 1:N relationship with APWTPIWOR. Ic_id also is a foreign property within APWTDE and acts as the "1". APWTIC acts as the "1" in a 1:N relationship with APWTDE.
This appendix shows form and report materializations for the dictionary prototype. Starting on the following page, these materializations start with the Introduction/Password screen and follow the following order: Main Menu Help screen, Reference Element options, Data Element options, Alias Element options, Class Word options, Prime Word options.
A. Introduction/Password and Main Menu Help Screens

Password:
Enter password for the application; [Esc] to cancel; [Enter] for no password.

Department of Defense (DOD)
Standardized Data Element Dictionary and Desktop Glossary

By
Dr. Dan Dolk & Capt J. S. Bacheller
Naval Postgraduate School
Monterey, CA
19900612

Press any key to end the help

Dictionary Layout:

<table>
<thead>
<tr>
<th>Ref Elmt</th>
<th>Data Elmt</th>
<th>DE Alias</th>
<th>Class Words</th>
<th>Prime Words</th>
<th>Queries</th>
<th>HELP Scrn</th>
<th>Leave Prm</th>
</tr>
</thead>
<tbody>
<tr>
<td>View</td>
<td>Add</td>
<td>Edit</td>
<td>Delete</td>
<td>Print</td>
<td>Help</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Structure:

Data Element

Prime Term + Reference Element

Modifier + Prime Word (0-6 optional) + Reference Element

Modifier + Class Word + Qualifier (0-1 optional) (Reqd) (0-2 optional)
B. Reference Element Options

Press any key to end the help

REFERENCE ELEMENT MENU HELP SCREEN

List Reference Elmts: View a list of all Ref Elements (displays: Record number, Ref Elmnt Number, Type(QL/QN, Status, Name).

Add Reference Elmts: Sends you to a lower menu where you have the option to add either Qualitative or Quantitative Ref Elmts.

Edit Reference Elmts: Sends you to a lower menu like the "Add" choice does. You may view or edit selected (by Number) Ref Elmts. The number is "display only" to maintain the data chain on that particular number.

Delete Reference Ele: You may delete a Reference Element, but first must delete the one-to-many attributes related to it first.

Print Reports: Sends you to a lower menu where you may select from numerous reports to print.

Help: Gives you this screen.

Press [F2] when finished viewing the table
Total records: 70

GENERAL REFERENCE ELEMENT LIST FORM

<table>
<thead>
<tr>
<th>Record</th>
<th>Reference</th>
<th>Data-Type</th>
<th>Status</th>
<th>Reference Element Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>QL</td>
<td>PR</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>QN</td>
<td>PR</td>
<td>Acceleration</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>QL</td>
<td>PR</td>
<td>Code</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>QN</td>
<td>PR</td>
<td>Amount</td>
</tr>
<tr>
<td>5</td>
<td>5</td>
<td>QL</td>
<td>PR</td>
<td>Name</td>
</tr>
</tbody>
</table>

Press the ARROW keys to scroll through the values.

121
**REFERENCE ELEMENT CREATE FORM**

<table>
<thead>
<tr>
<th>Field</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rec Num:</td>
<td>1</td>
</tr>
<tr>
<td>Reference Element Nbr:</td>
<td></td>
</tr>
<tr>
<td>Version Nbr:</td>
<td></td>
</tr>
<tr>
<td>Element Status ID:</td>
<td>[F1]</td>
</tr>
<tr>
<td>Modifier Name:</td>
<td></td>
</tr>
<tr>
<td>Class Word Name:</td>
<td></td>
</tr>
<tr>
<td>Qualifiers 1&amp;2</td>
<td></td>
</tr>
<tr>
<td>Resulting Reference Element Name</td>
<td></td>
</tr>
<tr>
<td>Data Value Type:</td>
<td></td>
</tr>
<tr>
<td>Max Length Characters:</td>
<td></td>
</tr>
<tr>
<td>Data Type Category:</td>
<td>[F1]</td>
</tr>
<tr>
<td>Justification Category:</td>
<td></td>
</tr>
<tr>
<td>Std Authority ID:</td>
<td>[F1]</td>
</tr>
<tr>
<td>Auth Doc Name:</td>
<td></td>
</tr>
<tr>
<td>Definition Text:</td>
<td></td>
</tr>
</tbody>
</table>

Press PgDn

---

**Comment Text:**

**Domain Definition Text:**

**Data Value Source List Text:**

<table>
<thead>
<tr>
<th>Field</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Creator ID:</td>
<td></td>
</tr>
<tr>
<td>Element Appvl Date:</td>
<td>(YYYYMMDD)</td>
</tr>
<tr>
<td>Review Status:</td>
<td></td>
</tr>
<tr>
<td>Element Mod Date:</td>
<td>(YYYYMMDD)</td>
</tr>
</tbody>
</table>

Press PgUp or PgDn

122
[F2] - Data entry completed, Esc - Cancel data entry, Ctrl-U - Undo last change

Press [F3] in order to move the cursor in/out of the fields below. Use the ARROW keys to scroll through the values.

Rec #  Data Value:  Data Value Definition Text:

Press PgUp or PgDn

["F2"] - Data entry completed, Esc - Cancel data entry, Ctrl-U - Undo last change

Complete for Quantitative Reference Elements only. Otherwise, press PgUp to create Qualitative Reference Elements.

Low Range Number:  Quan Data Scale Number:  High Range Number:

Press [F3] in order to move the cursor in/out of the fields below. Use the ARROW keys to scroll through the values.

Rec #  Data Value Nbr:  Data Value Definition Text:

Press PgUp

123
### Domain Definition Text:
A generic domain comprised of the characters in the ASCII graphic character set.

### Data Value Source List Text:

<table>
<thead>
<tr>
<th>Creator ID</th>
<th>Element Appvl Date</th>
<th>Review Status</th>
<th>Element Mod Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>ODISC4</td>
<td>(YYYYMMDD)</td>
<td></td>
<td>(YYYYMMDD)</td>
</tr>
<tr>
<td>Rec #</td>
<td>Data Value Nbr:</td>
<td>Data Value Definition Text:</td>
<td></td>
</tr>
<tr>
<td>-------</td>
<td>----------------</td>
<td>-----------------------------</td>
<td></td>
</tr>
</tbody>
</table>

Press PgUp or PgDn

[ F2 ] - Complete edit, [ Esc ] - Cancel edit, Ctrl-U - Undo last change
[ Del ] - Delete a record

Press PgDn

**QUALITATIVE/QUANTITATIVE REFERENCE ELEMENT DELETE FORM**

Rec Num: 1

Reference Element Number: 1

Version Nbr: 1

Element Status ID: PR

Modifier Name:

Class Word Name: Category

Qualifier Name:

Qualifier Name:

Reference Element Name:

Category

Use the [ F2 ] key to locate the Reference Element desired.
To delete either a Qualitative or Quantitative Reference Element, you must go to pages 2 and 3 in order to first delete the one-to-many attributes (using the [ Del ] key on each record). These must all be purged prior to deleting the actual Reference Element (Parent Record). Next, return to page 1 of the Reference Element and press [ Del ].

Press PgDn

Press PgDn

**QUALITATIVE/QUANTITATIVE REFERENCE ELEMENT DELETE FORM**

Rec Num: 1

Reference Element Number: 1

Version Nbr: 1

Element Status ID: PR

Modifier Name:

Class Word Name: Category

Qualifier Name:

Qualifier Name:

Reference Element Name:

Category

Use the [ F2 ] key to locate the Reference Element desired.
To delete either a Qualitative or Quantitative Reference Element, you must go to pages 2 and 3 in order to first delete the one-to-many attributes (using the [ Del ] key on each record). These must all be purged prior to deleting the actual Reference Element (Parent Record). Next, return to page 1 of the Reference Element and press [ Del ].

Press PgDn

Press PgDn

**QUALITATIVE/QUANTITATIVE REFERENCE ELEMENT DELETE FORM**

Rec Num: 1

Reference Element Number: 1

Version Nbr: 1

Element Status ID: PR

Modifier Name:

Class Word Name: Category

Qualifier Name:

Qualifier Name:

Reference Element Name:

Category

Use the [ F2 ] key to locate the Reference Element desired.
To delete either a Qualitative or Quantitative Reference Element, you must go to pages 2 and 3 in order to first delete the one-to-many attributes (using the [ Del ] key on each record). These must all be purged prior to deleting the actual Reference Element (Parent Record). Next, return to page 1 of the Reference Element and press [ Del ].

Press PgDn

Press PgDn

**QUALITATIVE/QUANTITATIVE REFERENCE ELEMENT DELETE FORM**

Rec Num: 1

Reference Element Number: 1

Version Nbr: 1

Element Status ID: PR

Modifier Name:

Class Word Name: Category

Qualifier Name:

Qualifier Name:

Reference Element Name:

Category

Use the [ F2 ] key to locate the Reference Element desired.
To delete either a Qualitative or Quantitative Reference Element, you must go to pages 2 and 3 in order to first delete the one-to-many attributes (using the [ Del ] key on each record). These must all be purged prior to deleting the actual Reference Element (Parent Record). Next, return to page 1 of the Reference Element and press [ Del ].

Press PgDn

Press PgDn
Press [F2] to move the cursor in/out of the fields below. Use the ARROW keys to scroll through the values.

<table>
<thead>
<tr>
<th>Rec #</th>
<th>Data Value:</th>
<th>Data Value Definition Text:</th>
</tr>
</thead>
</table>

Press PgUp
<table>
<thead>
<tr>
<th>Ref Elmt #</th>
<th>Data Val Type ID</th>
<th>Status ID</th>
<th>Reference Element Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>QL</td>
<td>PR</td>
<td>Category</td>
</tr>
<tr>
<td>2</td>
<td>QN</td>
<td>PR</td>
<td>Acceleration</td>
</tr>
<tr>
<td>3</td>
<td>QL</td>
<td>PR</td>
<td>Code</td>
</tr>
<tr>
<td>4</td>
<td>QN</td>
<td>PR</td>
<td>Amount</td>
</tr>
<tr>
<td>5</td>
<td>QL</td>
<td>PR</td>
<td>Name</td>
</tr>
<tr>
<td>6</td>
<td>QL</td>
<td>PR</td>
<td>Number</td>
</tr>
<tr>
<td>7</td>
<td>QL</td>
<td>PR</td>
<td>Number Percent</td>
</tr>
<tr>
<td>8</td>
<td>QL</td>
<td>PR</td>
<td>Text</td>
</tr>
<tr>
<td>9</td>
<td>QL</td>
<td>PR</td>
<td>Identifier</td>
</tr>
<tr>
<td>10</td>
<td>QL</td>
<td>PR</td>
<td>Date-Time-Group</td>
</tr>
<tr>
<td>11</td>
<td>QN</td>
<td>PR</td>
<td>Time</td>
</tr>
<tr>
<td>12</td>
<td>QN</td>
<td>PR</td>
<td>Year</td>
</tr>
<tr>
<td>13</td>
<td>QN</td>
<td>PR</td>
<td>Date</td>
</tr>
<tr>
<td>14</td>
<td>QN</td>
<td>PR</td>
<td>Year-Month Date</td>
</tr>
<tr>
<td>15</td>
<td>QN</td>
<td>PR</td>
<td>Ordinal Date</td>
</tr>
<tr>
<td>16</td>
<td>QN</td>
<td>PR</td>
<td>Latitude</td>
</tr>
<tr>
<td>17</td>
<td>QN</td>
<td>PR</td>
<td>Latitude Seconds</td>
</tr>
</tbody>
</table>
Reference Element Report

Record Number: 1
Reference Element Number: 1  Version Nbr: 1  Status ID: PR
Reference Element Name: Category
Data Value Type ID: QL  Max Length Characters: 250
Data Type Category: Character-string
Justification Category:
Standardization Authority ID: DA
Authorization Document Name:
Creator ID: ODISC4
Approval Date: (YYYYMMDD)
Mod Date: (YYYYMMDD)
Review Status:
If Quantitative:
  Low Range Nbr:
  High Range Nbr:
  Scale Nbr:
Definition Text:
A division or subset in a system of classification in which all items share the same concept.

Comment Text:
The ASCII graphic character set is in DA Pam 25-DM.

Domain Definition Text:
A generic domain comprised of the characters in the ASCII graphic character set.

Source List text:
<table>
<thead>
<tr>
<th>Record Number:</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reference Element Number:</td>
<td>56</td>
</tr>
<tr>
<td>Version Nbr:</td>
<td>1</td>
</tr>
<tr>
<td>Status ID:</td>
<td>PR</td>
</tr>
<tr>
<td>Reference Element Name:</td>
<td>Angle</td>
</tr>
<tr>
<td>Data Value Type:</td>
<td>QN</td>
</tr>
<tr>
<td>Max Length Characters:</td>
<td>15</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Rec Nbr</th>
<th>Data Value</th>
<th>Data Value Name</th>
<th>Definition Text</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Acute</td>
<td>Acute angle</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Obtuse</td>
<td>Obtuse angle</td>
<td></td>
</tr>
</tbody>
</table>
**Quantitative Reference Element**

**Data Values**

<table>
<thead>
<tr>
<th>Record Number: 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reference Element Number: 3</td>
</tr>
<tr>
<td>Version Nbr: 1</td>
</tr>
<tr>
<td>Status ID: PR</td>
</tr>
<tr>
<td>Reference Element Name:</td>
</tr>
<tr>
<td>Code</td>
</tr>
</tbody>
</table>

| Data Value Type: QL |
| Max Length Character: 35 |

<table>
<thead>
<tr>
<th>Rec Nbr</th>
<th>Data Value Number</th>
<th>Data Value Definition Text</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Letters</td>
<td>Letters for code.</td>
</tr>
<tr>
<td>2</td>
<td>Numbers</td>
<td>Numbers used for code.</td>
</tr>
</tbody>
</table>
C. Data Element Options

Press any key to end the help

<table>
<thead>
<tr>
<th>HELP SCREEN</th>
</tr>
</thead>
<tbody>
<tr>
<td>LIST Data Elements - Provides a view of a list of Data Elements (Rec Nbr, Data Element Nbr, Data Value Type, and Name).</td>
</tr>
<tr>
<td>ADD Data Elements - Add Qualitative/Quantitative Elements. Creation comes from adding a Reference Element to a Prime Term. The Data Element &quot;takes-on&quot; the Data Value of the Reference Element (Qualitative(QL)/Quantitative(QN)).</td>
</tr>
<tr>
<td>EDIT Data Elements - Edit a Data Element that you select by entering the Data Element Number when prompted.</td>
</tr>
<tr>
<td>Del Data Elements - After selecting this choice, page-through the Data Elements to locate a record. First delete all full fields under the &quot;[F3]&quot; prompts (they come from different tables). Then simply press &quot;{Del}&quot; when at the beginning of the desired record.</td>
</tr>
<tr>
<td>Print Data Elements - Moves to a lower menu for print options.</td>
</tr>
<tr>
<td>HELP - This screen.</td>
</tr>
</tbody>
</table>

Press [F2] when finished viewing the table
Total records: 50

<table>
<thead>
<tr>
<th>GENERAL DATA ELEMENT LIST FORM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rec#</td>
</tr>
<tr>
<td>------</td>
</tr>
<tr>
<td>1</td>
</tr>
<tr>
<td>2</td>
</tr>
<tr>
<td>3</td>
</tr>
</tbody>
</table>

Press the ARROW keys to scroll through the values.
### QUANTITATIVE/QUALITATIVE DATA ELEMENT CREATE FORM

**Data Element Number:**

**Version Number:**

**Status ID:** [F1]

**Before** Modifiers

**Prime Word**

**After** Modifiers

<table>
<thead>
<tr>
<th>Ref Elmnt Nbr: [F1] Name:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data Value ID:</td>
</tr>
<tr>
<td>Resulting Data Element Name</td>
</tr>
</tbody>
</table>

**NOTE:** Use an option-

6 Modifiers max (to

11 a Data Element).

---

**Mnemonic Abbr:**

**Information Class ID:** [F1]

**Security Cat:**

**Max Length Character:** [F1]

**Standardization Authority ID:** [F1]

**Max Length Character:** [F1]

**Authorization Document Name:**

**Creator ID:**

**Approval Date:** (YYYYMMDD)

**Admin Rvw Status:**

**Modification Date:** (YYYYMMDD)

**Calculation Fmla Text:**

**Comment Text:**

**Domain Definition Text:**

---

[F2] - Data entry completed, Esc - Cancel data entry, Ctrl-U - Undo last change

---

133
### For Qualitative Data Elements Only (QL)

<table>
<thead>
<tr>
<th>Responsible Office Name:</th>
<th>Definition Text:</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Qualitative Data Value Accuracy Number Percent:</th>
</tr>
</thead>
</table>

- Press [F3] to move in/out of the fields below. Use ARROW keys to scroll.

<table>
<thead>
<tr>
<th>Rec#</th>
<th>Data Value Name</th>
<th>Data Value Definition Text</th>
</tr>
</thead>
</table>

- Press PgUp or PgDn

### For Quantitative Data Elements Only (QN)

<table>
<thead>
<tr>
<th>Quantitative Data Accuracy Identifier:</th>
<th>*(F1)</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Quantitative Scale Number:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quantitative Low Range Number:</td>
</tr>
<tr>
<td>Quantitative High Range Number:</td>
</tr>
</tbody>
</table>

- Press [F3] to move in/out of the fields below. Use ARROW keys to scroll.

<table>
<thead>
<tr>
<th>Rec#</th>
<th>Data Value Number</th>
<th>Data Value Definition Text</th>
</tr>
</thead>
</table>

- Press PgUp
Where [F1] is shown, press the [F1] key to select from a list of choices.

Data Element Number: 1
Version Number: 1
Status ID: PR [F1]

Modifiers
1
2
3
4
5
6

NOTE: Use an option-10
6 Modifiers max (to
11
a Data Element).
12

Ref Elmnt Nbr: 5 [F1] Name: Name
Data Value ID: QL*

Resulting Data Element Name
Information Reference Element Name

Press PgDn

Mnemonic Abbr: Relm-Nme
Information Class ID: 1 [F1]
Security Cat: Unclassified [F1]
Max Length Character: 80
Standardization Authority ID: DA [F1]
Timeliness ID: Z [F1]
Authorization Document Name: ODISC4
Approval Date: (YYYYMMDD)
Modification Date: (YYYYMMDD)

Press [F3] to move in/out of the fields below.

Calculation Formula Text:

Source List Text:

Comment A reference element name consists of an optional modifier (M), a class word (cw), and one or two optional qualifiers (Q). For example, horizontal velocity miles-per-hour; static pressure

Domain A generic domain comprised of the following ASCII characters: A - Z; Hyphen (-); and Underscore (_).

Press PgUp or PgDn

135
[F2] - Complete edit, [Esc] - Cancel edit, Ctrl-U - Undo last change

Responsible
Office Name

Definition A character string given to a reference element based on a
text: class word that identifies a domain. (See comment text).

For Qualitative Data Elements Only (QL)

Qualitative Data Value Accuracy Number Percent:
—Press [F3] to move in/out of the fields below. Use ARROW keys to scroll.—
Rec#  Data Value Name  Data Value Definition Text

Press PgUp or PgDn

For Quantitative Data Elements Only (QN)

Quantitative Data Accuracy Identifier: 4 [F1]
Quantitative Scale Number:
Quantitative Low Range Number:
Quantitative High Range Number:

—Press [F3] to move in/out of the fields below. Use ARROW keys to scroll.—
Rec#  Data Value Number  Data Value Definition Text

Press PgUp
To delete an entire Data Element, you must first delete all filled fields below the [F3] prompts on pages 2-4 (using the [Del] key). When the fields under [F3] are empty, press the [Del] key.

<table>
<thead>
<tr>
<th>Data Element Number</th>
<th>Version Number</th>
<th>Status ID</th>
<th>Prime Word</th>
<th>Modifiers</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>PR</td>
<td>Information</td>
<td>[F1]</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>#Element</td>
<td></td>
</tr>
</tbody>
</table>

Ref Elmnt Nbr: 5  
Data Value ID: QL*

**Resulting Data Element Name**

Information Reference Element Name

---

**Mnemonic Abbr:** Relm-Nme  
**Information Class ID:** 1  
**Security Cat:** Unclassified  
**Max Length Character:** 80  
**Authorization Document Name:** ODISC4  
**Admin Rvw Status:**  
**Approval Date:** (YYYYMMDD)  
**Modification Date:** (YYYYMMDD)

Press [F3] to move in/out of the fields below.

**Comment**  
A reference element name consists of an optional modifier (M), a class word (cw), and one or two optional qualifiers (Q). For example, horizontal velocity miles-per-hour; static pressure.

**Domain**  
A generic domain comprised of the following ASCII characters: A - Z; Hyphen (-); and Underscore (_).

---

Press PgUp or PgDn
Responsible Office Name:

Definition: A character string given to a reference element based on a class word that identifies a domain. (See comment text).

For Qualitative Data Elements Only (QL)

Qualitative Data Value Accuracy Number Percent:

| Rec# | Data Value Name | Data Value Definition Text |

Press PgUp or PgDn

For Quantitative Data Elements Only (QN)

Quantitative Data Accuracy Identifier: *[F1]
Quantitative Scale Number:
Quantitative Low Range Number:
Quantitative High Range Number:

| Rec# | Data Value Number | Data Value Definition Text |

Press PgUp

[F2] - Complete edit, [Esc] - Cancel edit, Ctrl-U - Undo last change
[Del] - Delete a record
<table>
<thead>
<tr>
<th>Rec Nbr</th>
<th>Data Elmnt #</th>
<th>Val Type</th>
<th>Data Element Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>QL</td>
<td>Information Reference Element Name</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>QL</td>
<td>Information Data Value Type Identifier</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>QL</td>
<td>Information Element Class Word Name</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>QL</td>
<td>Information Element Modifier Name</td>
</tr>
<tr>
<td>5</td>
<td>5</td>
<td>QL</td>
<td>Information Reference Element Qualifier Name</td>
</tr>
<tr>
<td>6</td>
<td>6</td>
<td>QL</td>
<td>Information Element Data Type Category</td>
</tr>
<tr>
<td>7</td>
<td>7</td>
<td>QL</td>
<td>Information Element Definition Text</td>
</tr>
<tr>
<td>8</td>
<td>8</td>
<td>QL</td>
<td>Information Element Domain Definition Text</td>
</tr>
<tr>
<td>9</td>
<td>9</td>
<td>QL</td>
<td>Information Element Comment Text</td>
</tr>
<tr>
<td>10</td>
<td>10</td>
<td>QN</td>
<td>Information Element Maximum Data Value Length Characters</td>
</tr>
<tr>
<td>11</td>
<td>11</td>
<td>QL</td>
<td>Information Element Justification Category</td>
</tr>
</tbody>
</table>
Data Element Report

Record Number: 1

Data Element Number: 1  Version Nbr: 1  Status ID: PR

Data Element Name: Information Reference Element Name

Data Value Type ID: QL  Max Length Characters: 80
Mnemonic Abbreviation: Reln-Mme  Information Class ID: 1
Security Category: Unclassified
Timeliness ID: Z

Standardization Authority ID: DA
Authorization Document Name:

Creator ID: ODISC4  Element Approval Date: (YYYYMMDD)
Review Status: Element Mod Date: (YYYYMMDD)

Responsponsible Office Name:

Definition Text:
A character string given to a reference element based on a class word that identifies a domain. (See comment text).

Domain Definition Text:
A generic domain comprised of the following ASCII characters: A - Z; Hyphen (-); and Underscore (_).

Comment Text:
A reference element name consists of an optional modifier (M), a class word (cw), and one or two optional qualifiers (Q). For example, horizontal velocity miles-per-hour; static pressure millibars.

Calculation Formula Text:

Source List Text:

If a Qualitative Data Value: Qual Data Value Accracy %:

If a Quantitative Data Value:
Quan Low Range Number: Quan Data Accracy ID:
Quan High Range Number: Quan Scale Number:
<table>
<thead>
<tr>
<th>Record Number: 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data Element Number: 2</td>
</tr>
</tbody>
</table>

- **Data Element Name:** Information Data Value
- **Type:** Identifier
- **Data Value type:** QL

<table>
<thead>
<tr>
<th>Reg Nbr:</th>
<th>Data Value</th>
<th>Data Value Definition Text:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>QL</td>
<td>Qualitative Data Value</td>
</tr>
</tbody>
</table>

2 QN Quantitative Data Value
Quantitative Data Element

Data Values

7/23/90
Page 1

Record Number:  1

Data Element Number:  47  Version Number:  1  Status ID:  PR

Data Element Name:
Information Element Archival

Date

Data Value ID:  QN

Rec  Data Value  Data Value
Nbr:  Number     Definition Text:

1    Recent      Within one month.

2    late        Beyond required date.
D. Alias Element Options

Press any key to end the help

<table>
<thead>
<tr>
<th>ALIAS MENU HELP</th>
</tr>
</thead>
<tbody>
<tr>
<td>LIST Aliases    - Provides a view of a list of aliases and associated data element numbers that you may scroll through.</td>
</tr>
<tr>
<td>ADD Aliases     - Main Add form allows adding of Aliases, Associated data elements, and Qualitative or Quantitative Data Values.</td>
</tr>
<tr>
<td>EDIT Aliases    - Except for the &quot;Alias Number,&quot; allows editing of all aspects of the Alias.</td>
</tr>
<tr>
<td>DELETE Aliases  - Allows deletion of Aliases. You must first delete all items under the associated [F3] menus (qual, quan, and host applic information).</td>
</tr>
<tr>
<td>PRINT Reports   - Moves to a lower Menu for a myriad of print options.</td>
</tr>
<tr>
<td>HELP            - This screen.</td>
</tr>
</tbody>
</table>

Press [F2] when finished viewing the table
Total records: 2

<table>
<thead>
<tr>
<th>ALIAS-TO-DATA ELEMENT LIST FORM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rec #</td>
</tr>
<tr>
<td>-------</td>
</tr>
<tr>
<td>1</td>
</tr>
<tr>
<td>2</td>
</tr>
</tbody>
</table>

Press the ARROW keys to scroll through the values.
[F2] - Data entry completed, Esc - Cancel data entry, Ctrl-U - Undo last change

DATA ELEMENT ALIAS CREATE FORM

Where [F1] is shown, press the [F1] key for a list of choices.

Alias Number:
Alias Name:

Data Element Number: [F1] Version Nbr:
Data Element Name:

Data Value Type ID:
Max Length Characters:

Element Creator ID: Justification Cat:
Timeliness Identifier: [F1]
Domain
Def Text:

—Press [F3] to move in/out of the fields below. Use ARROW keys to scroll—
Rec# Host Applic Name Host System Name Int Fmt Cat Dea Resp Ofc Nme

Press PgUp or PgDn
For Qualitative Data Values Only:

- Press [F3] to move in/out of the fields below. Use ARROW keys to scroll.

<table>
<thead>
<tr>
<th>Rec#</th>
<th>Data Value Name</th>
<th>Data Value Definition Text</th>
</tr>
</thead>
</table>

Press PgUp or PgDn

For Quantitative Data Values Only:

- Press [F3] to move in/out of the fields below. Use ARROW keys to scroll.

<table>
<thead>
<tr>
<th>Rec#</th>
<th>Data Value Number</th>
<th>Data Value Definition Text</th>
</tr>
</thead>
</table>

Calc Fmla

Text:
### DATA ELEMENT ALIAS EDIT FORM

**Rec#:** 1

**Where [F1] is shown, press the [F1] key for a list of choices.**

<table>
<thead>
<tr>
<th>Alias Number:</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Alias Name</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Accounting Code</strong></td>
<td></td>
</tr>
</tbody>
</table>

**Data Element Number:** 1  [F1]  **Version Nbr:** 1

| **Data Element Name** |    |
| **Information Reference Element** | Name |

**Data Value Type ID:** QL

**Max Length Characters:** 34

**Element Creator ID:**

**Justification Cat:** Left

**Timeliness Identifier:** Qwe  [F1]

**Domain**

**Def Text:**

---

Press [F3] to move in/out of the fields below. Use ARROW keys to scroll.

<table>
<thead>
<tr>
<th>Rec#</th>
<th>Host Applic Name</th>
<th>Host System Name</th>
<th>Int Fat Cat</th>
<th>Dea Resp Ofc Nme</th>
</tr>
</thead>
</table>

146
[F2] - Complete edit, [Esc] - Cancel edit, Ctrl-U - Undo last change

Comment
Text:

Source
List Text:

For Qualitative Data Values Only

Qualitative Data Value Accuracy Nbr %: 4

-Press [F3] to move in/out of the fields below. Use ARROW keys to scroll-

Rec# Data Value Name Data Value Definition Text

1 Report Accounting code report.

2 Status Accounting Status.

Press PgUp or PgDn

For Quantitative Data Values Only

Calc Fmla
Text:

Quantitative Data Value Accuracy ID: [F1] Quan Scale Nbr:
Quan Low Range Nbr: Quan High Range Nbr:

-Press [F3] to move in/out of the fields below. Use ARROW keys to scroll-

Rec# Data Value Number Data Value Definition Text

Press PgUp
To delete an Alias, first delete data in all fields listed under [F3] on pages 2-4. Then return to page 1 and press the [Del] key.

<table>
<thead>
<tr>
<th>DATA ELEMENT Alias DELETE FORM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rec#: 1</td>
</tr>
<tr>
<td>Alias Number: 1</td>
</tr>
<tr>
<td>Accounting Code</td>
</tr>
<tr>
<td>Data Element Number: 1</td>
</tr>
<tr>
<td>Data Element Name</td>
</tr>
<tr>
<td>Information Reference Name</td>
</tr>
<tr>
<td>Data Value Type ID: QL</td>
</tr>
<tr>
<td>Data Length Characters: 34</td>
</tr>
</tbody>
</table>

[F2] - Complete edit, [Esc] - Cancel edit, Ctrl-U - Undo last change
[Del] - Delete a record

Element Creator ID: *    Justification Cat: Left
Timeliness Identifier: QWE
Domain
Def Text:

---Press [F3] to move in/out of the fields below. Use ARROW keys to scroll---
Rec# Host Applic Name Host System Name Int Fmt Cat Dea Resp Ofc Nme

Press PgUp or PgDn
<table>
<thead>
<tr>
<th>Rec#</th>
<th>Data Value Name</th>
<th>Data Value Definition Text</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Report</td>
<td>Accounting code report.</td>
</tr>
<tr>
<td>2</td>
<td>Status</td>
<td>Accounting Status.</td>
</tr>
</tbody>
</table>

**For Qualitative Data Values Only**

- Press [F3] to move in/out of the fields below. Use ARROW keys to scroll.

**For Quantitative Data Values Only**

- Press [F3] to move in/out of the fields below. Use ARROW keys to scroll.
## Alias List Report

### 7/23/90

**Page 1**

<table>
<thead>
<tr>
<th>Rec Nbr</th>
<th>Alias Nbr</th>
<th>Alias Name</th>
<th>Data Elmn Nbr</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>Accounting Code</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>Business Accounting Code</td>
<td>1</td>
</tr>
</tbody>
</table>
Record Number: 1
Data Element Number: 1

Data Element Name:
Information Reference Element
Name

<table>
<thead>
<tr>
<th>Rec</th>
<th>Alias Nbr</th>
<th>Alias</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td>1</td>
<td>Accounting Code</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>2</td>
<td>Business Accounting Code</td>
</tr>
</tbody>
</table>
Alias Report

---

7/23/90
Page 1

Record Number:  1

Alias Number:  1

Alias Name:
Accounting Code

Data Value Type ID: QL
Max Length Characters:  34
Timeliness ID:  Qwe
Justification Category: Left
Creator ID:

Domain Definition Text:

Comment Text:

Source List Text:

Host Applic Name:
Host System Name:

Internal Use Catgory:
Alias Responsible Office Name:

If Qualitative, the following field applies:
  Qualitative Data Value Accuracy Nbr 1:
  4

If Quantitative, the following fields apply:
  Quantitative Accuracy ID:
  Quan Scale Number:
  Quan Low Range Nbr:
  Quan High Range Nbr:

<table>
<thead>
<tr>
<th>Rec Nbr</th>
<th>Data Elmnt Nbr</th>
<th>Data Elmnt Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>Information Reference Element Name</td>
</tr>
</tbody>
</table>
## Alias Qualitative Data Values

<table>
<thead>
<tr>
<th>Record Number: 1</th>
<th>Alias Number: 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alias Name:</td>
<td>Accounting Code</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Rec Nbr</th>
<th>Data Value Name</th>
<th>Data Value Definition Text</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Report</td>
<td>Accounting code report.</td>
</tr>
<tr>
<td>2</td>
<td>Status</td>
<td>Accounting Status.</td>
</tr>
</tbody>
</table>
Alias Quantitative Data Values

Record Number: 1
Alias Number: 2
Alias Name: Business Accounting Code

<table>
<thead>
<tr>
<th>Rec Nbr</th>
<th>Data Value Number</th>
<th>Data Value Definition Text</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Business code date (accounting).</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Business code value (accounting).</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

154
**E. Class Word Options**

Press [F2] when finished viewing the table

Total records: 39

<table>
<thead>
<tr>
<th>Rec</th>
<th>Class Word Name</th>
<th>Data Value Type ID</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Acceleration</td>
<td>QN</td>
</tr>
<tr>
<td>2</td>
<td>Amount</td>
<td>QN</td>
</tr>
<tr>
<td>3</td>
<td>Angle</td>
<td>QN</td>
</tr>
<tr>
<td>4</td>
<td>Area</td>
<td>QN</td>
</tr>
<tr>
<td>5</td>
<td>Category</td>
<td>OL</td>
</tr>
<tr>
<td>6</td>
<td>Code</td>
<td>OL</td>
</tr>
<tr>
<td>7</td>
<td>Count</td>
<td>QN</td>
</tr>
<tr>
<td>8</td>
<td>Date</td>
<td>QN</td>
</tr>
<tr>
<td>9</td>
<td>Date-Time-Group</td>
<td>OL</td>
</tr>
<tr>
<td>10</td>
<td>Density</td>
<td>QN</td>
</tr>
<tr>
<td>11</td>
<td>Depth</td>
<td>QN</td>
</tr>
<tr>
<td>12</td>
<td>Distance</td>
<td>QN</td>
</tr>
<tr>
<td>13</td>
<td>Flow</td>
<td>QN</td>
</tr>
<tr>
<td>14</td>
<td>Height</td>
<td>QN</td>
</tr>
</tbody>
</table>

Use ARROW keys to scroll through the values.

[F2] - Data entry completed, Esc - Cancel data entry, Ctrl-U - Undo last change

Class Word Name:  

Data Value Type ID:  

Class Word Definition Text:  

Information Class Category Name:  

---

155
CLASS WORD EDIT and DELETE FORM

Class Word Name: Acceleration  Data Value Type ID: Q9
Class Word Definition Text:
Change in velocity.

Information Class Category Name:

In the "edit" mode, Class Word Name is "display" only. To delete, press the [Del] key.
<table>
<thead>
<tr>
<th>Rec Nbr</th>
<th>Class Word Name</th>
<th>Data Type</th>
<th>Class Word Definition Text</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Acceleration</td>
<td>QN</td>
<td>The rate of change of velocity.</td>
</tr>
<tr>
<td>2</td>
<td>Amount</td>
<td>QN</td>
<td>A monetary value arrived at by counting, aggregation, or calculation.</td>
</tr>
<tr>
<td>3</td>
<td>Angle</td>
<td>QN</td>
<td>The space formed by two lines diverging from a common point.</td>
</tr>
<tr>
<td>4</td>
<td>Area</td>
<td>QN</td>
<td>The number of unit squares equal in measure to the surface of an object.</td>
</tr>
<tr>
<td>5</td>
<td>Category</td>
<td>QL</td>
<td>A division or subset in a system of classification in which all items share the same concept.</td>
</tr>
<tr>
<td>6</td>
<td>Code</td>
<td>QL</td>
<td>A designation for a specific object expressed in one or more characters. A set of qualitative, non-literal data, the specified internal structure of which is not easily determined without interpretation (decoding).</td>
</tr>
<tr>
<td>7</td>
<td>Cost</td>
<td>CN</td>
<td>The amount paid or required in payment for a purchase.</td>
</tr>
<tr>
<td>8</td>
<td>Date</td>
<td>QN</td>
<td>A notation of a specific 24 hour period of time expressed in the format year, month, and day; (YYYYMMDD).</td>
</tr>
<tr>
<td>9</td>
<td>Date-Time-Group</td>
<td>QL</td>
<td>A character string designating a specific date, time, and time zone in the format DDMTHHMZMMMYY (JCS).</td>
</tr>
<tr>
<td>10</td>
<td>Density</td>
<td>QN</td>
<td>The mass per unit volume of particular items of interest.</td>
</tr>
</tbody>
</table>
Class Word Report

Record Number: 1

Class Word Name: Code
Data Value Type ID: QL

Information Class Category Name:

Class Word Definition Text:
A designation for a specific object expressed in one or more characters.
A set of qualitative, non-literal data, the specified internal structure of which is not easily determined without interpretation (decoding).
F. Prime Word Options

Press [F2] when finished viewing the table
Total records: 264

<table>
<thead>
<tr>
<th>Rec Nbr</th>
<th>Prime Word Name</th>
<th>Army Data Arch Subject-Area Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Accounting</td>
<td>Budget</td>
</tr>
<tr>
<td>2</td>
<td>Acquisition</td>
<td>Acquisition</td>
</tr>
<tr>
<td>3</td>
<td>Administration</td>
<td>Support Activities</td>
</tr>
<tr>
<td>4</td>
<td>Affair</td>
<td>Public Affairs</td>
</tr>
<tr>
<td>5</td>
<td>Agency</td>
<td>Contracts</td>
</tr>
<tr>
<td>6</td>
<td>Agreement</td>
<td>Transportation</td>
</tr>
<tr>
<td>7</td>
<td>Air</td>
<td>Operations Plans</td>
</tr>
<tr>
<td>8</td>
<td>Air-Defence</td>
<td>Operations Plans</td>
</tr>
<tr>
<td>9</td>
<td>Air-Ground</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Aircraft</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Airfield</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Airlift</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Airport</td>
<td></td>
</tr>
</tbody>
</table>

Use the ARROW keys to scroll through the values.

[F2] - Data entry completed, Esc - Cancel data entry, Ctrl-U - Undo last change

<table>
<thead>
<tr>
<th>Prime Word Name:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Army Data Architecture Subject-Area Name:</td>
</tr>
<tr>
<td>Field</td>
</tr>
<tr>
<td>-----------------------------</td>
</tr>
<tr>
<td>Prime Word Word</td>
</tr>
<tr>
<td>Army Data Architecture</td>
</tr>
<tr>
<td>Subject-Area Name</td>
</tr>
<tr>
<td>Rec Nbr</td>
</tr>
</tbody>
</table>

[F2] - Complete edit, [Esc] - Cancel edit, Ctrl-U - Undo last change
[Del] - Delete a record

Press PgUp or PgDn
<table>
<thead>
<tr>
<th>Prime Word Name</th>
<th>Army Data Architecture Subject-Area Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accounting</td>
<td>Budget</td>
</tr>
<tr>
<td>Acquisition</td>
<td>Acquisition</td>
</tr>
<tr>
<td>Administration</td>
<td>Support Activities</td>
</tr>
<tr>
<td>Affair</td>
<td>Public Affairs</td>
</tr>
<tr>
<td>Agency</td>
<td>Contracts</td>
</tr>
<tr>
<td>Agreement</td>
<td>Transportation</td>
</tr>
<tr>
<td>Air</td>
<td>Operations Plans</td>
</tr>
<tr>
<td>Air-Defence</td>
<td>Operations Plans</td>
</tr>
<tr>
<td>Air-Ground</td>
<td></td>
</tr>
<tr>
<td>Aircraft</td>
<td></td>
</tr>
<tr>
<td>Airfield</td>
<td></td>
</tr>
<tr>
<td>Airlift</td>
<td></td>
</tr>
<tr>
<td>Airport</td>
<td></td>
</tr>
<tr>
<td>Alert</td>
<td></td>
</tr>
<tr>
<td>Ammunition</td>
<td>Facilities</td>
</tr>
<tr>
<td>Anchorage</td>
<td>Funds</td>
</tr>
<tr>
<td>Annex</td>
<td></td>
</tr>
<tr>
<td>Appropriated</td>
<td></td>
</tr>
<tr>
<td>Apron</td>
<td></td>
</tr>
<tr>
<td>Arctic</td>
<td></td>
</tr>
<tr>
<td>Army</td>
<td>Unit(s) and Organization(s)</td>
</tr>
<tr>
<td>Arresting-Gear</td>
<td></td>
</tr>
<tr>
<td>Arrival</td>
<td></td>
</tr>
<tr>
<td>Assessment</td>
<td>Operations Plans</td>
</tr>
<tr>
<td>Asset</td>
<td></td>
</tr>
<tr>
<td>Assistance</td>
<td>Security Assistance</td>
</tr>
</tbody>
</table>
A. USER'S MANUAL

1. Introduction

This manual will discuss in detail the operations of the prototype dictionary. The system forms and reports are displayed in Appendix F. The menu system is self-prompting, identifying computer keyboard options to run desired functions. Where operations become questionable, instructions will be more detailed.

2. General Operations

The following general operations are universal unless otherwise discussed:

1. Keyboard buttons in this manual are represented by placing brackets around the key symbol or word. For example, the "enter" key is [Enter] and the "A" key is [A].

2. Navigating menus. Because the menus are a horizontal bar-type, like Lotus 123, use the right and left arrow keys to move to a desired selection. Then press [Enter] to activate your selection.

3. Look-up tables. On several forms, certain fields, identified by a yellow [F1] on the right side of the data field, use look-up tables as a pool of options that can only be used for that field. Press [F1] to reveal the look-up table. A standard table will appear with data choices within it. You may use the [Arrows] to explore the table. Select the desired data option
by highlighting the correct horizontal line with your cursor and pressing [F2].

4. The [F2] key. In most form operations, pressing [F2] means "do-it." In other words, the selected operation will cease and all current data added, edited, viewed, or deleted data changes will be saved. The user will be returned to the menu.

5. Embedded forms can be identified by the [F3] key instruction heading (prior to the fields). The [F3] must be used to get into and out of embedded forms.

3. Initializing The System

At the "C:\" prompt type "DODDICT" and press [Enter]. This Disk Operating System (DOS) batch file will initialize Paradox 3.0 and play the master script. When completed, the introduction/password screen will be shown. Enter the password "DODDICT" and press [Enter]. The main menu will replace the introduction/password screen.

4. The Reference Element Menu Selection

Upon making this selection, the user is presented with the following Reference Element options: (1) View a list of Reference Elements; (2) Add Reference Elements; (3) Edit a selected Reference Element; (4) Delete Reference Elements; (5) Move to a sub-menu of Reference Element printed report options; (6) Menu Help; (7) Leave and return to the next higher menu. Descriptions of these operations are as follows:
a. View a list of Reference Elements

This view displays record number, Reference Element number, Data Type (Qualitative or Quantitative), element status, and Reference Element name. This list can be scrolled by using the up and down [Arrows]. No update operations are permitted. Total number of records are posted at the top of the form. Press [F2] when done with the view.

b. Add Reference Elements

This four-page form (with two embedded fields) shows all of the attributes associated with Reference Element as well as options to make the Reference Element Qualitative or Quantitative. The cursor is first set on Reference Element Number. This is a required field; a number must be inserted, otherwise no more operations are permitted. If nothing is placed in the Version field, it will default to "1." Also, the Status ID will default to "PR," meaning Proposed (An [F1] option is available here). The Name is built with an optional Modifier, required Class Word, and 2 optional Qualifiers. As you finish each field, the complete name will appear in the narrow box below. An [F1] option exists with Class Word. If the Class Word field is bypassed, "REQUIRED FIELD" is inserted into both the Class Word field and the Name field. After a Class Word is
chosen, an associated Data Value type and Definition text is automatically inserted. The Data Value type is fixed based on the Class Word (Cannot be changed), but the Definition Text may be edited. The remaining attributes on the first and second page are self explanatory (Other [F1] options exist).

Page three is for Qualitative (QL) Reference Elements only. The Instructions are self-explanatory. Page four is for Quantitative (QN) Reference Elements only and is also self-explanatory. At the completion of page four, the operator has the option to [PgDn] to a new add form or end the add process.

To end the process the user may: (1) Press [F2] in order to save the new record and end the add process; (2) Press [Ctrl] and [U] together to delete his new record and start at a fresh record to continue the add process; (3) Press [Esc] to end the add process. Note, the user may have to place a number in the required first field in order to use the [Esc] option. This number will not be recorded as a new element.

c. Edit an Existing Reference Element

The user is asked for a Reference Element Number upon selection of this option. A four-page form, identical to the add form appears. The Reference Element Number field
cannot be edited. Introduction of a new number at this point would confuse the 1:N relationships in the embedded forms (The Qualitative and Quantitative options). Other than this, operations are identical in edit except for the fact that the user can only edit a Reference Element number that he first requests.

If new Qualitative Data Items or Quantitative Data Values need to be added or old ones subtracted, the edit form is the correct place to do it. Non-required attributes may be deleted in the edit mode. However, full Reference Element deletion cannot be done in this option.

d. Delete Reference Elements

The system does not ask for a number, but presents records in order. The user must use [PgDn] and [PgUp] to locate the desired record. The three-page form is different than the add and edit forms. To delete a Reference Element, the user must first delete all data in the embedded forms. Use [F3] to enter the embedded forms and then use the [Del] key. All links must be deleted prior to deleting the "master" record. This helps maintain data integrity by not permitting the Qualitative and Quantitative data to exist without a parent Reference Element. Once the embedded forms are cleared, the [Del] key can be pressed to remove the Reference Element.
e. Move to a Printed Report options sub-menu

This selection moves the user to a sub-menu with the following options: (1) Print a Reference Element list; (2) Print a detailed report on a Reference Element; (3) Print the Qualitative Data Items associated with a Reference Element; (4) Print the Quantitative Data Values associated with a Reference Element; (5) Leave: move to the next higher menu.

(1) Print a Reference Element List. This option routes an entire Reference Element list, similar to the view option, to the printer.

(2) Print a detailed report on a Reference Element. This option asks for a Reference Element number for input and then sends a detailed report with all of the Reference Element attributes, except Data Items and Data Values, to the printer.

(3) Print the Qualitative Data Items associated with a Reference Element. Based on the input of Reference Element number, this option prints all of the Data Items associated with a Reference Element. If the Reference Element does not have these values or is a Quantitative Data Value, "Nothing to report" will be flashed on the screen.
(4) **Print the Quantitative Data Values associated with a Reference Element.** Based on the input of Reference Element number, this option prints all of the Data Values associated with a Reference Element. If the Reference Element does not have these values or is a Qualitative Data Value, "Nothing to report" will be flashed on the screen.

(5) **Leave.** This option lets you return to the next higher menu.

(6) **Menu Help.** This option describes each menu selection option in detail.

**f. Leave and return to the next higher menu**

This option is self-explanatory.

5. **The Data Element Menu Selection**

Upon making this selection, the user is presented with the following Data Element options: (1) View a list of Data Elements; (2) Add Data Elements; (3) Edit a selected Data Element; (4) Delete Data Elements; (5) Move to a sub-menu of Data Element printed report options; (6) Menu Help; (7) Leave and return to the next higher menu. Descriptions of these operations are as follows:

**a. View a list of Data Elements**

This view displays record number, Data Element number, Data Type (Qualitative or Quantitative), element
status, and Data Element name. This list can be scrolled by using the up and down [Arrows]. No update operations are permitted. Total number of records are posted at the top of the form. Press [F2] when done with the view.

b. **Add Data Elements**

This four-page form (with three embedded fields) shows all of the attributes associated with Data Element as well as options to make the Data Element Qualitative or Quantitative. The cursor is first set on Data Element Number. This is a required field; a number must be inserted, otherwise no more operations are permitted. If nothing is placed in the Version field, it will default to "1." Also, the Status ID will default to "PR," meaning Proposed (An [F1] option is available here). The Name is built with an optional six Modifiers and a required Prime Word. Note that twelve Modifiers are offered. This is because the Prime word may be positioned anywhere and this system must allow for six modifiers before or six after. Only choose six modifiers total. As you finish each field, the name will start appear in the narrow box below. An [F1] option exists with Prime Word. If the Prime Word field is bypassed, "REQUIRED FIELD" is inserted into both the Prime Word field and the Name field. Next, a Reference Element number is chosen as part of the Data Element. An [F1]
option is offered here. After the Reference Element is chosen, the associated Definition text is automatically inserted. This is because the domain of the Data Element must be the same or a subset of the Reference Element. The Data Value type is fixed based on the Reference Element (Cannot be changed), but the Definition Text may be edited. The remaining attributes on the first and second page are self explanatory (Other [F1] options exist).

Page three is for Qualitative (QL) Data Elements only. The Instructions are self-explanatory. Page four is for Quantitative (QN) Data Elements only and is also self-explanatory. At the completion of page four, the operator has the option to [PgDn] to a new add form or end the add process.

To end the process the user may: (1) Press [F2] in order to save the new record and end the add process; (2) Press [Ctrl] and [U] together to delete his new record and start at a fresh record to continue the add process; (3) Press [Esc] to end the add process. Note, the user may have to place a number in the required first field in order to use the [Esc] option. This number will not be recorded as a new element.
c. Edit an Existing Data Element

The user is asked for a Data Element Number upon selection of this option. A four-page form, identical to the add form appears. The Data Element Number field cannot be edited. Introduction of a new number at this point would confuse the 1:N relationships in the embedded forms (The Qualitative and Quantitative options). Other than this, operations are identical in edit except for the fact that the user can only edit a Data Element number that he first requests.

If new Qualitative Data Items or Quantitative Data Values need to be added or old ones subtracted, the edit form is the correct place to do it. Non-required attributes may be deleted in the edit mode. However, full Data Element deletion cannot be done in this option.

d. Delete Data Elements

The system does not ask for a number, but presents records in order. The user must use [PgDn] and [PgUp] to locate the desired record. The three-page form is different than the add and edit forms. To delete a Data Element, the user must first delete all data in the embedded forms. Use [F3] to enter the embedded forms and then use the [Del] key. All links must be deleted prior to deleting the "master" record. This helps maintain data integrity by
not permitting the Qualitative and Quantitative data to exist without a parent Data Element. Once the embedded forms are cleared, the [Del] key can be pressed to remove the Data Element.

e. Move to a Printed Report options sub-menu

This selection moves the user to a sub-menu with the following options: (1) Print a Data Element list; (2) Print a detailed report on a Data Element; (3) Print the Qualitative Data Items associated with a Data Element; (4) Print the Quantitative Data Values associated with a Data Element; (5) Leave: move to the next higher menu.

(1) Print a Data Element List. This option routes an entire Data Element list, similar to the view option, to the printer.

(2) Print a detailed report on a Data Element. This option asks for a Data Element number for input and then sends a detailed report with all of the Data Element attributes, except Data Items and Data Values, to the printer.

(3) Print the Qualitative Data Items associated with a Data Element. Based on the input of Data Element number, this option prints all of the Data Items associated with a Data Element. If the Data Element does
not have these values or is a Quantitative Data Value, "Nothing to report" will be flashed on the screen.

(4) Print the Quantitative Data Values associated with a Data Element. Based on the input of Data Element number, this option prints all of the Data Values associated with a Data Element. If the Data Element does not have these values or is a Qualitative Data Value, "Nothing to report" will be flashed on the screen.

(5) Leave. This option lets you return to the next higher menu.

(6) Menu Help. This option describes each menu selection option in detail.

f. Leave and return to the next higher menu

This option is self-explanatory.

6. The Alias Element Menu Selection

Upon making this selection, the user is presented with the following Alias Element options: (1) View a list of Alias Elements; (2) Add Alias Elements; (3) Edit a selected Alias Element; (4) Delete Alias Elements; (5) Move to a sub-menu of Alias Element printed report options; (6) Menu Help; (7) Leave and return to the next higher menu. Descriptions of these operations are as follows:
a. View a list of Alias Elements

This view displays record number, Alias Element number, Alias Element name, and associated Data Element numbers. This list can be scrolled by using the up and down [Arrows]. No update operations are permitted. Total number of records are posted at the top of the form. Press [F2] when done with the view.

b. Add Alias Elements

This four-page form (with three embedded fields) shows all of the attributes associated with Alias Element as well as options to make the Alias Element Qualitative or Quantitative. The cursor is first set on Alias Element Number. This is a required field; a number must be inserted, otherwise no more operations are permitted. Next the Alias Element name is inserted. Then, a Data Element must then be associated with the Alias. An [F1] option may be used here to select one associated Data Element. The remaining attributes on the first page and beginning of the second page are self explanatory (Other [F1] options exist). The latter half of the second page is an embedded form containing host system application data.

Page three is for Qualitative (QL) Alias Elements only. An embedded form is located on page three. The Instructions are self-explanatory. Page four is for
Quantitative (QN) Alias Elements only and is also self-explanatory. An embedded form is also located here. At the completion of page four, the operator has the option to [PgDn] to a new add form or end the add process.

To end the process the user may: (1) Press [F2] in order to save the new record and end the add process; (2) Press [Ctrl] and [U] together to delete his new record and start at a fresh record to continue the add process; (3) Press [Esc] to end the add process. Note, the user may have to place a number in the required first field in order to use the [Esc] option. This number will not be recorded as a new element.

c. Edit an Existing Alias Element

The user is asked for a Alias Element Number upon selection of this option. A four-page form, identical to the add form appears. The Alias Element Number field cannot be edited. Introduction of a new number at this point would confuse the 1:N relationships in the embedded forms (The Qualitative and Quantitative options). Other than this, operations are identical in edit except for the fact that the user can only edit an Alias Element number that he first requests.

If new Qualitative Data Items or Quantitative Data Values need to be added or old ones subtracted, the
edit form is the correct place to do it. Non-required attributes may be deleted in the edit mode. However, full Alias Element deletion cannot be done in this option.

d. Delete Alias Elements

The system does not ask for a number, but presents records in order. The user must use [PgDn] and [PgUp] to locate the desired record. The four-page form is slightly different than the add and edit forms. To delete a Alias Element, the user must first delete all data in the embedded forms. Use [F3] to enter the embedded forms and then use the [Del] key. All links must be deleted prior to deleting the "master" record. This helps maintain data integrity by not permitting the Qualitative and Quantitative data to exist without a parent Data Element. Once the embedded forms are cleared, the [Del] key can be pressed to remove the Alias Element.

e. Move to a Printed Report options sub-menu

This selection moves the user to a sub-menu with the following options: (1) Print a list of Alias Elements and their associated Data Element numbers; (2) From Data Element number input, print a list of associated Alias Elements; (3) Print a detailed report on a Alias Element; (4) Print the Qualitative Alias Items associated with a Alias Element; (5) Print the Quantitative Data Values.
associated with a Alias Element; (6) Leave: move to the next higher menu.

(1) **Print an Alias Element List.** This option routs an entire Alias Element list with associated Data Element numbers, similar to the view option, to the printer.

(2) **From Data Element number input, print a list of associated Alias Elements.** Self-explanatory.

(3) **Print a detailed report on a Alias Element.** This option asks for a Alias Element number for input and then sends a detailed report with all of the Alias Element attributes, except Data Items and Data Values, to the printer.

(4) **Print the Qualitative Data Items associated with a Alias Element.** Based on the input of Alias Element number, this option prints all of the Data Items associated with a Alias Element. If the Alias Element does not have these values or is a Quantitative Data Value, "Nothing to report" will be flashed on the screen.

(5) **Print the Quantitative Data Values associated with an Alias Element.** Based on the input of Alias Element number, this option prints all of the Data Values associated with an Alias Element. If the Alias Element does not have these values or is a Qualitative Data Value, "Nothing to report" will be flashed on the screen.
(6) Leave. This option lets you return to the next higher menu.

(7) Menu Help. This option describes each menu selection option in detail.

f. Leave and return to the next higher menu

This option is self-explanatory.

7. The Class Word Menu Selection

Upon making this selection, the user is presented with the following Class Word options: (1) View a list of Class Words; (2) Add Class Words; (3) Edit/Delete Class Words; (4) Move to a sub-menu of Class Word printed report options; (5) Leave and return to the next higher menu. Descriptions of these operations are as follows:

a. View a list of Class Words

This view displays record number, Class Word name, and Data Value Type ID. This list can be scrolled by using the up and down [Arrows]. No update operations are permitted. Total number of records are posted at the top of the form. Press [F2] when done with the view.

b. Add Class Words

This one-page form shows all of the attributes associated with a Class Word. The cursor is first set on Class Word name. This is a required field; a name must be
inserted, otherwise no more operations are permitted. The remaining attributes may then be added.

To end the process the user may: (1) Press [F2] in order to save the new record and end the add process; (2) Press [Ctrl] and [U] together to delete his new record and start at a fresh record to continue the add process; (3) Press [Esc] to end the add process. Note, the user may have to place a name in the required first field in order to use the [Esc] option. This name will not be recorded as a new element.

c. Edit/Delete an Existing Class Word

The system does not ask for a name, but presents the records in order. Class Words are a finite set. A one-page form appears. All fields can be edited. To delete a Class Word, you must first delete associated Reference Elements. Then press the [Del] key.

d. Move to a Printed Report options sub-menu

This selection moves the user to a sub-menu with the following options: (1) Print a list of Class Words; (2) Print a detailed report on a Class Word.

(1) Print a Class Word List. This option prints an entire Class Word list with associated Data Value type ID’s.
(2) From Class Word name input, print a detailed report on a Class Word. This option is self-explanatory.

(3) Leave. This option lets you return to the next higher menu.

e. Leave and return to the next higher menu

This option is self-explanatory.

8. The Prime Word Menu Selection

Upon making this selection, the user is presented with the following Prime Word options: (1) View a list of Prime Words; (2) Add Prime Words; (3) Edit/Delete Prime Words; (4) Move to a sub-menu of Class Word printed report options; (5) Leave and return to the next higher menu.

Descriptions of these operations are as follows:

a. View a list of Prime Words

This view displays record number, Prime Word name, and Data Architecture Subject-area Name. This list can be scrolled by using the up and down [Arrows]. No update operations are permitted. Total number of records are posted at the top of the form. Press [F2] when done with the view.

b. Add Prime Words

This one-page form shows all of the attributes associated with a Prime Word. The cursor is first set on
Prime Word name. This is a required field; a name must be inserted, otherwise no more operations are permitted. The remaining attribute Army Data Architecture Subject-area Name, may then be added.

To end the process the user may: (1) Press [F2] in order to save the new record and end the add process; (2) Press [Ctrl] and [U] together to delete his new record and start at a fresh record to continue the add process; (3) Press [Esc] to end the add process. Note, the user may have to place a name in the required first field in order to use the [Esc] option. This name will not be recorded as a new element.

c. Edit/Delete an Existing Prime Word

The system does not ask for a name, but presents the records in order. Prime Words are a finite set. A one-page form appears. All fields can be edited. To delete a Prime Word, you must first delete associated Data Elements. Then press the [Del] key.

d. Print a List of Prime Words

This option sends a report listing the Prime Words and Data Subject-areas to the printer.

e. Leave and return to the next higher menu

This option is self-explanatory.
9. The Unique Query Menu Option

This option is set-aside for future development based on user needs.

10. The Main Menu Help Option

Selection of this option displays a one-page help screen which diagrams the menu hierarchy and gives brief instruction on how to navigate through the menu hierarchy structure.

11. The Leave Application Menu Option

This option lets you leave the application.
APPENDIX I

;****************************************************************************************;
; Dname Script
; Paradox 3.0 PAL
; Master Application Script. Calls other sub-scripts.
; Jack Bacheller 21Jul90
;****************************************************************************************;

if (sysmode() <> "Main") then
  Message "The application can only be started from Paradox main mode"
  Sleep 3000
  return
endif

Echo Off
Clear
Reset
Cursor Off

; put up the greeting screen
@ 2, 0
Play "Dnameg"

; ask for the password to the application; this password determines
; the access to the tables in the application allowed for the
; current user of the application.

@ 0, 0
Style Attribute SysColor(0)
?? fill(" ",160)
@ 1, 0
?? "Enter password for the application; [Esc] to cancel; [Enter] for no password."
@ 0, 0
?? "Password: "
Cursor Normal
zzzcolor = int(SysColor(0) / 16)
Sty. § Attribute ((zzzcolor * 16) + zzzcolor)
Accept "a50" To pword
Style
EscEnter = not retval
Cursor Off

if (EscEnter) then
  Message "Cancelling the application"
  Sleep 2000
  Clear
  return
endif

if (pword <> "") then
  Password pword
endif

; set up the error proc for the application

ReadLib "Dnameutil" ApplicErrorProc
ErrorProc = "ApplicErrorProc"
ApplicErrorRetVal = FALSE

; Start the application

ReadLib "Dname1" Dname1Menu
Dname1Menu()
Release Procs Dname1Menu

Clearall
if (pword <> "") then
  UnPassword pword
endif
;***********************************************************************
; Dnamel Script
; Paradox 3.0 PAL
; Provides the logic for the main menu, calls other scripts.
; Jack Bacheller 21Jul90
;***********************************************************************

AppLib = "Dnamel"
if (not isfile(AppLib + ".lib")) then
  Createlib AppLib
endif

proc DnamelMenu()
private x, escape, zzzmexit, zzzzexit, pword

  zzzzexit = FALSE
  x = "Reference Elements"
  while (TRUE)
    Clear

    ShowMenu
      "Reference Elements": "View, add, edit, delete, print Reference Elements."
      "Data Elements": "View, add, edit, delete, and print Data Elements."
      "Aliases": "View, add, edit, delete, and print Data Element Aliases."
      "Class Words": "View, add, edit, delete, print Class Words."
      "Prime Words": "View, add, edit, delete, and print Prime Words."
      "Unique Queries": "View special queries of Information classes, subject areas."
      "HELP": "Help screen describing dictionary purpose and layout."
      "Leave": "Leave the application"
    Default x
    To x

    switch
      case x = "Reference Elements":
        Play "Ref"
        x = "Reference Elements"
        escape = FALSE

      case x = "Data Elements":
        Play "Dat"

      case x = "Aliases":
        Play "Ali"

      case x = "Class Words":
        Play "Class"

      case x = "Prime Words":
        Play "Prime"

      case x = "Unique Queries":
        Play "Unique"

      case x = "HELP":
        Play "HELP"

      case x = "Leave":
        Play "Leave"

      default:
        Play "Default"
    endswitch
  endwhile
x = "Data Elements"
escape = FALSE
case x = "Aliases":
    Play "Dea"
x = "Aliases"
    escape = FALSE
case x = "Class Words":
    Play "Cwd"
x = "Class Words"
    escape = FALSE
case x = "Prime Words":
    Play "Pwd"
x = "Prime Words"
    escape = FALSE
case x = "Unique Queries":
    ReadLib "Dnameutl" PlayHelp
    PlayHelp("Dnameh2")
    Release Procs PlayHelp
    escape = FALSE
case x = "HELP":
    ReadLib "Dnameutl" PlayHelp
    PlayHelp("Dnamehl")
    Release Procs PlayHelp
    escape = FALSE
case x = "Leave":
    ShowMenu
        "No": "Do not leave the application."
        "Yes": "Leave the application."
    To zzzmexit
    zzzzexit = (zzzmexit = "Yes")
    escape = (zzzmexit = "Esc")
case x = "Esc":
    escape = FALSE
endswitch
Reset
; reset ErrorProc value
ErrorProc = "ApplicErrorProc"
ApplicErrorRetVal = FALSE

if (zzzzexit) then
    return TRUE
endif

if (not escape) then
    x = "Reference Elements"
endif
endwhile
endproc

Writelib AppLib Dname1Menu
Release Procs Dname1Menu
;******************************************************************************************
; Ref Script
; Paradox 3.0 PAL
; Reference Element Main Script. Calls other Ref Elmnt scripts.
; Jack Bacheller 21Jul90
;******************************************************************************************

Echo Off
Clear
Reset
Cursor Off

; set up the error proc for the application

ReadLib "Refutl" ApplicErrorProc
ErrorProc = "ApplicErrorProc"
ApplicErrorRetVal = FALSE

; Start the application

ReadLib "Refl" ReflMenu
ReflMenu()
Release Procs ReflMenu

Clearall
;********************************************************************
; Refl menu script
; Paradox 3.0 PAL
; Reference Element main script menu operations.
; Jack Bacheller 21Jul90
;********************************************************************

AppLib = "Ref1"
if (not isfile(AppLib + ".lib")) then
  Createlib AppLib
endif

proc ReflS1()
  private opResult
    Readlib "Refutl" ViewTable, ToggleForm, VwFldView,
    HelpKey
    opResult = ViewTable("Apwtrelm", "Apwtrelm", "5", FALSE)
    Release Procs ViewTable, ToggleForm, VwFldView,
    HelpKey
    return opResult
endproc

Writelib AppLib ReflS1
Release Procs ReflS1

proc ReflS2()
  private opResult
    Readlib "Refutl" EntryTable, KECheck, ToggleForm,
    EdFldView, HelpKey, EntryCancel, EntryDoIt,
    RenamePre, RenameSet, SaveList, CreateList,
    PrintList
    opResult = EntryTable("Apwtrelm", ",", "7", FALSE)
    Release Procs EntryTable, KECheck, ToggleForm,
    EdFldView, HelpKey, EntryCancel, EntryDoIt,
    RenamePre, RenameSet, SaveList, CreateList,
    PrintList
    return opResult
endproc

189
Writelib AppLib Ref1S2
Release Procs Ref1S2

proc Ref1S3()
private opResult, tbl, rt, EscEnter, count

    Play "Refql" ; put query on workspace
    if (ApplicErrorRetVal) then
        ClearAll
        return FALSE
    endif

    Readlib "Refutl" EnterVal
    ; get value for variable count
    count = EnterVal("Enter the Reference Element Number
that you wish to edit. ", ",",",", 1)
    Release Procs EnterVal
    if (EscEnter) then
        ClearAll
        return FALSE
    endif

    Readlib "Refutl" QueryDolt
    rt = QueryDolt()
    Release Procs QueryDolt

    if (not rt) then
        return FALSE
    endif

    if (isempty("Answer")) then
        Message "No records to edit"
        Sleep 3000
        return FALSE
    endif

    if (ApplicErrorRetVal) then
        return FALSE
    endif

    Readlib "Refuti" EditTable, ToggleForm, EdFldView,
       HelpKey, EditCancel, QEditDoIt

    opResult = EditTable("Answer", "Apwtrelm", ",", "8", FALSE,
                          "QEditDoIt", ",",
                          ",",
                          TRUE, FALSE, TRUE)
Release Procs EditTable, ToggleForm, EdFldView, HelpKey, EditCancel, QEditDoIt

return opResult
endproc

Writelib AppLib Ref1S3
Release Procs Ref1S3

proc Ref1S4()
private opResult

if (isempty("Apwtrelm")) then
  Message "No records to edit"
  Sleep 3000
  return FALSE
endif

if (ApplicErrorRetVal) then
  return FALSE
endif

Readlib "Refuti" EditTable, ToggleForm, EdFldView, HelpKey, EditCancel, SEditDoIt, SEditDelNoIns

opResult = EditTable("Apwtrelm", "Apwtrelm", ", ", "6", FALSE,
  "SEditDoIt", "SEditDelNoIns",
  "[Del] - Delete a record",
  TRUE, FALSE, FALSE)

Release Procs EditTable, ToggleForm, EdFldView, HelpKey, EditCancel, SEditDoIt, SEditDelNoIns

return opResult
endproc

Writelib AppLib Ref1S4
Release Procs Ref1S4

proc Ref1Menu()
private x, escape, zzmexit, zzzzexit

zzzzexit = FALSE
x = "LIST Reference Elmts"
while (TRUE)
Clear

ShowMenu

"LIST Reference Elmts": "View a listing of Reference Elements (#, Name, Type, Status).",
"ADD Reference Elmts": "Add Qualitative or Quantitative Reference Elements.",
"EDIT Reference Elmts": "Edit selected Qualitative or Quantitative Reference Elements",
"DELETE Reference Elm": "Delete Qualitative or Quantitative Reference Elements.",
"PRINT REPORTS": "Move to the PRINT REPORTS menu for Report selection.",
"HELP": "Lists Help for this menu level.",
"Leave": "Leave the Reference Element Application."

Default x
To x

switch

case x = "LIST Reference Elmts":
    ReadLib "Ref1" Ref1S1
    escape = Ref1S1()
    escape = not escape
    Release Procs Ref1S1

case x = "ADD Reference Elmts":
    ReadLib "Ref1" Ref1S2
    escape = Ref1S2()
    escape = not escape
    Release Procs Ref1S2

case x = "EDIT Reference Elmts":
    ReadLib "Ref1" Ref1S3
    escape = Ref1S3()
    escape = not escape
    Release Procs Ref1S3

case x = "DELETE Reference Elm":
    ReadLib "Ref1" Ref1S4
    escape = Ref1S4()
    escape = not escape
    Release Procs Ref1S4

case x = "PRINT REPORTS":
    Play "Refpt"
    x = "PRINT REPORTS"
    escape = FALSE
case x = "HELP":
  ReadLib "Refutl" PlayHelp

PlayHelp("Refhl")
Release Procs PlayHelp

  escape = FALSE

  case x = "Leave":
    ShowMenu
      "No": "Do not leave the Reference Element application.",
      "Yes": "Leave the Reference Element application."
    To zzzmexit

    zzzzexit = (zzzmexit = "Yes")
    escape = (zzzmexit = "Esc")

  case x = "Esc":
    escape = FALSE
  endswitch

Reset
  ; reset ErrorProc value
ErrorProc = "ApplicErrorProc"
ApplicErrorRetVal = FALSE

  if (zzzzexit) then
    return TRUE
  endif

  if (not escape) then
    x = "LIST Reference Elmts"
  endif
endwhile
endproc

Writelib AppLib ReflMenu
Release Procs ReflMenu

193
Echo Off
Clear
Reset
Cursor Off

; set up the error proc for the application

ReadLib "Refptutl" ApplicErrorProc
ErrorProc = "ApplicErrorProc"
ApplicErrorRetVal = FALSE

; Start the application

ReadLib "Refpt1" Refpt1Menu
Refpt1Menu()
Release Procs Refpt1Menu

Clearall
;**************************************************************************
; Refpt1 Script
; Paradox 3.0 PAL
; Reference Element Print operations.
; Jack Bacheller 21Jul90
;**************************************************************************

AppLib = "Refpt1"
if (not isfile(AppLib + ".lib")) then
    Createlib AppLib
endif

proc Refpt1S1()
private opResult

    Readlib "Refptutl" ReportTable

    opResult = ReportTable("Apwtrelm", "Apwtrelm", "R", "Printer", "")

    Release Procs ReportTable

    return opResult
endproc

Writelib AppLib Refpt1S1
Release Procs Refpt1S1

proc Refpt1S2()
private opResult, tbl, rt, EscEnter, coung

    Play "Refptq3" ; put query on workspace
    if (ApplicErrorRetVal) then
        ClearAll
        return FALSE
    endif

    Readlib "Refptutl" EnterVal
    ; get value for variable coung
    coung = EnterVal("Enter the Reference Element Number. ", ",", ",", 0)
    Release Procs EnterVal
    if (EscEnter) then
        ClearAll
        return FALSE
    endif

195
Readlib "Refptutl" QueryDoIt
rt = QueryDoIt()
Release Procs QueryDoIt

if (not rt) then
    return FALSE
endif

Readlib "Refptutl" ReportTable

opResult = ReportTable("Answer", "Apwtrelm", "1", "Printer", ")

Release Procs ReportTable

return opResult
endproc

Writelib AppLib Refpt1S2
Release Procs Refpt1S2

proc Refpt1S3()
    private opResult, tbl, rt, EscEnter, counh

    Play "Refptql" ; put query on workspace
    if (ApplicErrorRetVal) then
        ClearAll
        return FALSE
    endif

    Readlib "Refptutl" EnterVal
    ; get value for variable counh
    counh = EnterVal("Enter the Reference Element Number.
", "N", ",", 0)
    Release Procs EnterVal
    if (EscEnter) then
        ClearAll
        return FALSE
    endif

    Readlib "Refptutl" QueryDoIt
    rt = QueryDoIt()
    Release Procs QueryDoIt

    if (not rt) then
        return FALSE
    endif

196
Readlib "Refptutl" ReportTable

opResult = ReportTable("Answer", "Apwtrrefd", "R", "Printer", "")

Release Procs ReportTable

return opResult
endproc

Writelib AppLib Refpts3
Release Procs Refpts3
proc Refpts4()
private opResult, tbl, rt, EscEnter, counj

Play "Refptq2" ; put query on workspace
if (ApplicErrorRetVal) then
  ClearAll
  return FALSE
endif

Readlib "Refptutl" EnterVal ; get value for variable counj
  counj = EnterVal("Enter the Reference Element Number.", "N", ",", 0)
Release Procs EnterVal
if (EscEnter) then
  ClearAll
  return FALSE
endif

Readlib "Refptutl" QueryDoIt
rt = QueryDoIt()
Release Procs QueryDoIt

if (not rt) then
  return FALSE
endif

Readlib "Refptutl" ReportTable

opResult = ReportTable("Answer", "Apwtrreqd", "R", "printer", ")

Release Procs ReportTable
return opResult
endproc

Writelib AppLib Refpt1S4
Release Procs Refpt1S4

proc Refpt1Menu()
private x, escape, zzmexit, zzzzexit

zzzzexit = FALSE
x = "PRINT Ref Elmt List"
while (TRUE)
  Clear
  ShowMenu
  "PRINT Ref Elmt List": "Print a combined list of Reference Elmts (#,Type,Name,Stat).",
  "PRINT Ref Element": "Print a report on a selected, specific Reference Element.",
  "PRINT Qual Data Vals": "Print the Qualitative Data Values for a selected Ref Elmnt.",
  "PRINT Quan Data Vals": "Print the Data Values for a selected Quantitative Ref Elmnt.",
  "Leave": "Leave the application"
Default x
To x

switch x = "PRINT Ref Elmt List":
  ReadLib "Refpt1" Refpt1S1
  escape = Refpt1S1()
  escape = not escape
  Release Procs Refpt1S1

case x = "PRINT Ref Element":
  ReadLib "Refpt1" Refpt1S2
  escape = Refpt1S2()
  escape = not escape
  Release Procs Refpt1S2

case x = "PRINT Qual Data Vals":
  ReadLib "Refpt1" Refpt1S3
  escape = Refpt1S3()
  escape = not escape
  Release Procs Refpt1S3

case x = "PRINT Quan Data Vals":
  ReadLib "Refpt1" Refpt1S4

198
escape = Refpt1S4()
escape = not escape
Release Procs Refpt1S4

case x = "Leave":
   ShowMenu
      "No": "Do not leave the application. ",
      "Yes": "Leave the application."
   To zzzmexit

   zzzzexit = (zzzmexit = "Yes")
   escape = (zzzmexit = "Esc")

   case x = "Esc":
      escape = FALSE
   endswitch

   Reset
   ; reset ErrorProc value
   ErrorProc = "ApplicErrorProc"
   ApplicErrorRetVal = FALSE

   if (zzzzexit) then
      return TRUE
   endif

   if (not escape) then
      x = "PRINT Ref Elmt List"
   endif
endwhile
endproc

Writelib AppLib Refpt1Menu
Release Procs Refpt1Menu
Echo Off
Clear
Reset
Cursor Off

; set up the error proc for the application

ReadLib "Datutil" ApplicErrorProc
ErrorProc = "ApplicErrorProc"
ApplicErrorRetVal = FALSE

; Start the application

ReadLib "Dat1" Dat1Menu
Dat1Menu()
Release Procs Dat1Menu
Clearall
AppLib = "Dat1"
if (not isfile(AppLib + ".lib")) then
    Createlib AppLib
endif

proc Dat1S1()
    private opResult
    Readlib "Datut1" ViewTable, ToggleForm, VwFldView, HelpKey
    opResult = ViewTable("Apwtde", "Apwtde", "4", FALSE)
    Release Procs ViewTable, ToggleForm, VwFldView, HelpKey
    return opResult
endproc

Writelib AppLib Dat1S1
Release Procs Dat1S1

proc Dat1S2()
    private opResult
    Readlib "Datut1" EntryTable, KECheck, ToggleForm, EdFldView, HelpKey, EntryCancel, EntryDoIt, RenamePre, RenameSet, SaveList, CreateList, PrintList
    opResult = EntryTable("Apwtde", ",", "8", FALSE)
    Release Procs EntryTable, KECheck, ToggleForm, EdFldView, HelpKey, EntryCancel, EntryDoIt, RenamePre, RenameSet, SaveList, CreateList, PrintList
    return opResult
endproc
Writelib AppLib Dat1S2
Release Procs Dat1S2

proc Dat1S3()
private opResult, tbl, rt, EscEnter, coub

  Play "Datq2" ; put query on workspace
  if (ApplicErrorRetVal) then
    ClearAll
    return FALSE
  endif

  Readlib "Datutl" EnterVal
  ; get value for variable coub
  coub = EnterVal("Enter the Data Element Number. ", "N", ", ", 0)
  Release Procs EnterVal
  if (EscEnter) then
    ClearAll
    return FALSE
  endif

  Readlib "Datutl" QueryDoIt
  rt = QueryDoIt()
  Release Procs QueryDoIt

  if (not rt) then
    return FALSE
  endif

  if (isempty("Answer")) then
    Message "No records to edit"
    Sleep 3000
    return FALSE
  endif

  if (ApplicErrorRetVal) then
    return FALSE
  endif

  Readlib "Datutl" EditTable, ToggleForm, EdFldView,
HelpKey, EditCancel, QEditDoIt

  opResult = EditTable("Answer", "Apwtde", ", ", 9, FALSE,
  "QEditDoIt", ", ", ", ",
TRUE, FALSE, TRUE)
Release Procs EditTable, ToggleForm, EdFldView, HelpKey, EditCancel, QEditDoIt

    return opResult
endproc

Writelib AppLib Dat1S3
Release Procs Dat1S3

proc Dat1S4()
private opResult

    if (isempty("Apwtde")) then
        Message "No records to edit"
        Sleep 3000
        return FALSE
    endif

    if (ApplicErrorRetVal) then
        return FALSE
    endif

    Readlib "Datutl" EditTable, ToggleForm, EdFldView, HelpKey, EditCancel, SEditDoIt, SEditDelNoIns

    opResult = EditTable("Apwtde", "Apwtde", ",", "10", FALSE, "SEditDoIt", "SEditDelNoIns",
                        ",Del] - Delete a record",
                        TRUE, FALSE, FALSE)

    Release Procs EditTable, ToggleForm, EdFldView, HelpKey, EditCancel, SEditDoIt, SEditDelNoIns

    return opResult
endproc

Writelib AppLib Dat1S4
Release Procs Dat1S4

proc Dat1Menu()
private x, escape, zzzmexit, zzzzexit

    zzzzexit = FALSE
    x = "LIST Data Elements"
    while (TRUE)
        Clear

    203
ShowMenu

"LIST Data Elements": "View a list of Qualitative and Quantitative Data Elements."
"ADD Data Elements": "Add Qualitative or Quantitative Data Elements."
"EDIT Data Elements": "Edit a specific, selected Qualitative or Quantitative Data Element."
"DELETE Data Elements": "Delete Qualitative or Quantitative Data Elements."
"PRINT Data Elements": "Move to a lower menu for Data Element print options."
"HELP": "Help on this menu."
"Leave": "Leave the application"

Default x
To x

switch

case x = "LIST Data Elements":
  ReadLib "Dat1" Dat1S1
  escape = Dat1S1()
  escape = not escape
  Release Procs Dat1S1

case x = "ADD Data Elements":
  ReadLib "Dat1" Dat1S2
  escape = Dat1S2()
  escape = not escape
  Release Procs Dat1S2

case x = "EDIT Data Elements":
  ReadLib "Dat1" Dat1S3
  escape = Dat1S3()
  escape = not escape
  Release Procs Dat1S3

case x = "DELETE Data Elements":
  ReadLib "Dat1" Dat1S4
  escape = Dat1S4()
  escape = not escape
  Release Procs Dat1S4

case x = "PRINT Data Elements":
  Play "Datpt"
  x = "PRINT Data Elements"
  escape = FALSE

case x = "HELP":
  ReadLib "Datut1" PlayHelp

204
PlayHelp("Dathl")
Release Procs PlayHelp

    escape = FALSE

    case x = "Leave":
        ShowMenu
        "No": "Do not leave the application."
        "Yes": "Leave the application."
    endcase

    To zzzmexit

    zzzzexit = (zzzmexit = "Yes")
    escape = (zzzmexit = "Esc")

    case x = "Esc":
        escape = FALSE
    endcase

endswitch

Reset
; reset ErrorProc value
ErrorProc = "ApplicErrorProc"
ApplicErrorRetVal = FALSE

if (zzzzexit) then
    return TRUE
endif

if (not escape) then
    x = "LIST Data Elements"
endif
endwhile

endproc

Writelib AppLib DatlMenu
Release Procs DatlMenu
Echo Off
Clear
Reset
Cursor Off

; set up the error proc for the application

ReadLib "Datptutl" ApplicErrorProc
ErrorProc = "ApplicErrorProc"
ApplicErrorRetVal = FALSE

; Start the application

ReadLib "Datpt1" Datpt1Menu
Datpt1Menu()
Release Procs Datpt1Menu

Clearall

206
private opResult

Readlib "Datptutl" ReportTable

opResult = ReportTable("Apwtde", "Apwtde", "1", "Printer", "")

Release Procs ReportTable

return opResult
endproc

Writelib AppLib Datpt1S1
Release Procs Datpt1S1

proc Datpt1S2()
private opResult, tbl, rt, EscEnter, couh

Play "Datptql" ; put query on workspace
if (ApplicErrorRetVal) then
    ClearAll
    return FALSE
endif

Readlib "Datptutl" EnterVal
; get value for variable couh
    couh = EnterVal("Enter the Data Element Number: ",
    "N", ",", 0)
Release Procs EnterVal
if (EscEnter) then
    ClearAll
    return FALSE
endif

Readlib "Datptutl" QueryDoIt
rt = QueryDoIt()
Release Procs QueryDoIt

if (not rt) then
    return FALSE
endif

Readlib "Datptutl" ReportTable

opResult = ReportTable("Answer", "Apwtde", "R", "Printer", "")
Release Procs ReportTable

return opResult
c
endproc

Writelib AppLib Datpt1S2
Release Procs Datpt1S2

proc Datpt1S3()
private opResult, tbl, rt, EscEnter, couw

Play "Datptq2" ; put query on workspace
if (ApplicErrorRetVal) then
  ClearAll
  return FALSE
endif

Readlib "Datptutl" EnterVal ; get value for variable couw
  couw = EnterVal("Enter the Data Element Number: ",
  "N", ",", 0)
Release Procs EnterVal
if (EscEnter) then
  ClearAll
  return FALSE
endif

Readlib "Datptutl" QueryDoIt
rt = QueryDoIt()
Release Procs QueryDoIt

if (not rt) then
  return FALSE
endif

Readlib "Datptutl" ReportTable

opResult = ReportTable("Answer", "Apwtdedi", "R",
"Printer", "")

Release Procs ReportTable

return opResult
c
endproc

Writelib AppLib Datpt1S3
Release Procs Datpt1S3

208
proc DatptlS4()
private opResult, tbl, rt, EscEnter, couq

Play "Datptq3" ; put query on workspace
if (ApplicErrorRetVal) then
   ClearAll
   return FALSE
endif

Readlib "Datptutl" EnterVal
; get value for variable couq
   couq = EnterVal("Enter the Data Element Number: ", "N", ",", 0)
Release Procs EnterVal
if (EscEnter) then
   ClearAll
   return FALSE
endif

Readlib "Datptutl" QueryDolt
rt = QueryDolt()
Release Procs QueryDolt
if (not rt) then
   return FALSE
endif

Readlib "Datptutl" ReportTable
opResult = ReportTable("Answer", "Apwtdeqd", "R", "Printer", ")
Release Procs ReportTable
return opResult
endproc

Writelib AppLib DatptlS4
Release Procs DatptlS4

proc Datpt1Menu()
private x, escape, zzmexit, zzzzexit

zzzexit = FALSE
x = "PRINT Data Elmt List"
while (TRUE)
   Clear

209
ShowMenu

"PRINT Data Elmt List": "Print a list of Qualitative and Quantitative Data Elements.",
"PRINT Data Element": "Print a detailed report on a specific, selected Data Element",
"PRINT Qual Data Vals": "Print the Qualitative Data Values of a selected Data Element",
"PRINT Quan Data Vals": "Print the Quantitative Data Values of a selected Data Elmnt.",
"Leave": "Leave the application"

Default x
To x

switch

case x = "PRINT Data Elmt List":
    ReadLib "Datptl" DatptlS1
    escape = DatptlS1()
    escape = not escape
    Release Procs DatptlS1

case x = "PRINT Data Element":
    ReadLib "Datptl" DatptlS2
    escape = DatptlS2()
    escape = not escape
    Release Procs DatptlS2

case x = "PRINT Qual Data Vals":
    ReadLib "Datptl" DatptlS3
    escape = DatptlS3()
    escape = not escape
    Release Procs DatptlS3

case x = "PRINT Quan Data Vals":
    ReadLib "Datptl" DatptlS4
    escape = DatptlS4()
    escape = not escape
    Release Procs DatptlS4

case x = "Leave":
    ShowMenu
        "No": "Do not leave the application.",
        "Yes": "Leave the application."
    To zzzmexit

    zzzzexit = (zzzmexit = "Yes")
    escape = (zzzmexit = "Esc")

case x = "Esc":

210
escape = FALSE
endswitch

Reset
; reset ErrorProc value
ErrorProc = "ApplicErrorProc"
ApplicErrorRetVal = FALSE

if (zzzzexit) then
  return TRUE
endif

if (not escape) then
  x = "PRINT Data Elmt List"
endif
endwhile
endproc

Writelib AppLib Datpt1Menu
Release Procs Datpt1Menu
Echo Off
Clear
Reset
Cursor Off

; set up the error proc for the application

ReadLib "Deautl" ApplicErrorProc
ErrorProc = "ApplicErrorProc"
ApplicErrorRetVal = FALSE

; Start the application

ReadLib "Deal" DealMenu
DealMenu()
Release Procs DealMenu
Clearall
;************************************************************************************
; Deal Script
; Paradox 3.0 PAL
; Data Element Alias Main menu operations.
; Jack Bacheller 21Jul90
;************************************************************************************

AppLib = "Deal"
if (not isfile(AppLib + ".lib")) then
   Createlib AppLib
endif

proc DealS1()
private opResult

   Readlib "Deautl" ViewTable, ToggleForm, VwFldView,
   HelpKey

   opResult = ViewTable("Apwtal", "Apwtal", "3", FALSE)

   Release Procs ViewTable, ToggleForm, VwFldView,
   HelpKey

   return opResult
endproc

Writelib AppLib DealS1
Release Procs DealS1

proc DealS2()
private opResult

   Readlib "Deautl" EntryTable, KECheck, ToggleForm,
   EdFldView, HelpKey, EntryCancel, EntryDoIt,
   RenamePre, RenameSet, SaveList, CreateList,
   PrintList

   opResult = EntryTable("Apwtal", ",", "F", FALSE)

   Release Procs EntryTable, KECheck, ToggleForm,
   EdFldView, HelpKey, EntryCancel, EntryDoIt,
   RenamePre, RenameSet, SaveList, CreateList,
   PrintList

   return opResult

213
endproc

Writelib AppLib DealS2
Release Procs DealS2

proc DealS3()
private opResult

    if (isempty("Apwtal")) then
        Message "No records to edit"
        Sleep 3000
        return FALSE
    endif

    if (ApplicErrorRetVal) then
        return FALSE
    endif

Readlib "Deautl" EditTable, ToggleForm, EdFldView,
    HelpKey, EditCancel, SEditDoIt

    opResult = EditTable("Apwtal", "Apwtal", ",", ",1", FALSE,
                    ",SEditDoIt", ",
        ",TRUE, FALSE, FALSE)

    Release Procs EditTable, ToggleForm, EdFldView,
        HelpKey, EditCancel, SEditDoIt

    return opResult
endproc

Writelib AppLib DealS3
Release Procs DealS3

proc DealS4()
private opResult

    if (isempty("Apwtal")) then
        Message "No records to edit"
        Sleep 3000
        return FALSE
    endif

    if (ApplicErrorRetVal) then
        return FALSE
    endif
Readlib "Deaut1" EditTable, ToggleForm, EdFldView, HelpKey, EditCancel, SEditDoIt, SEditDelNoIns

opResult = EditTable("Apwtal", "Apwtal", ",", "2", FALSE, "SEditDoIt", "SEditDelNoIns", 
[Del] - Delete a record", TRUE, FALSE, FALSE)

Release Procs EditTable, ToggleForm, EdFldView, HelpKey, EditCancel, SEditDoIt, SEditDelNoIns

release procs EditTable, ToggleForm, EdFldView, HelpKey, EditCancel, SEditDoIt, SEditDelNoIns

return opResult
endproc

Writelib AppLib DealS4
Release Procs DealS4

proc DealMenu()
private x, escape, zzzmexit, zzzzexit

zzzzexit = FALSE
x = "LIST Aliases"
while (TRUE)
  Clear
  ShowMenu
  "LIST Aliases": "View a list of Aliases and associated Data Elements.",
  "ADD Aliases": "Add an Alias and associate it with a Data Element.",
  "EDIT Aliases": "Edit Aliases.",
  "DELETE Aliases": "Delete Aliases.",
  "PRINT Alias Reports": "Move to a lower menu for Alias Report options.",
  "HELP": "Help with this menu.",
  "Leave": "Leave the application"
Default x
to x

switch
  case x = "LIST Aliases":
    ReadLib "Deal" DealS1
    escape = DealS1()
    escape = not escape
    release procs DealS1
  case x = "ADD Aliases":
  215
ReadLib "Deal" DealS2
escape = DealS2()
escape = not escape
Release Procs DealS2

case x = "EDIT Aliases":
    ReadLib "Deal" DealS3
    escape = DealS3()
    escape = not escape
    Release Procs DealS3

case x = "DELETE Aliases":
    ReadLib "Deal" DealS4
    escape = DealS4()
    escape = not escape
    Release Procs DealS4

case x = "PRINT Alias Reports":
    Play "Deapt"
    x = "PRINT Alias Reports"
    escape = FALSE

case x = "HELP":
    ReadLib "Deautl" PlayHelp
    PlayHelp("Deahl")
    Release Procs PlayHelp
    escape = FALSE

case x = "Leave":
    ShowMenu
        "No": "Do not leave the application."
        "Yes": "Leave the application."
    To zzzmexit
        zzzzexit = (zzzmexit = "Yes")
    escape = (zzzmexit = "Esc")

case x = "Esc":
    escape = FALSE
endswitch

Reset
    ; reset ErrorProc value
    ErrorProc = "ApplicErrorProc"
    ApplicErrorRetVal = FALSE
if (zzzzexit) then
    return TRUE
endif

if (not escape) then
    x = "LIST Aliases"
endif
endwhile
endproc

Writelib AppLib DealMenu
Release Procs DealMenu

;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
; Deapt Script
; Paradox 3.0 PAL
; Data Element Alias Printing options main script.
; Jack Bacheller 21Jul90
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;

Echo Off
Clear
Reset
Cursor Off

; set up the error proc for the application

ReadLib "Deaptut1" ApplicErrorProc
ErrorProc = "ApplicErrorProc"
ApplicErrorRetVal = FALSE

; Start the application

ReadLib "Deapt1" Deapt1Menu
Deapt1Menu()
Release Procs Deapt1Menu

Clearall
Deapti Script
Paradox 3.0 PAL
Data Element Alias printing script amenu operations.
Jack Bacheller 21Jul90

;************************************************************************************
; Deapti Script
; Paradox 3.0 PAL
; Data Element Alias printing script amenu operations.
; Jack Bacheller 21Jul90
;************************************************************************************

AppLib = "Deapti"
if (not isfile(AppLib + ".lib")) then
    Createlib AppLib
endif

proc DeaptlS1()
    private opResult

        Readlib "Deaptutl" ReportTable

        opResult = ReportTable("Apwtal", "Apwtal", "2", "Printer", "]")

        Release Procs ReportTable

        return opResult
endproc

Write.Lib AppLib Deapt1S1
Release Procs Deapt1S1

proc Deapt1S2()
    private opResult, tbl, rt, EscEnter, data

        Play "Deaptq4" ; put query on workspace
        if (ApplicErrorRetVal) then
            ClearAll
            return FALSE
        endif

        Readlib "Deaptutl" EnterVal
        ; get value for variable data
data = EnterVal("Enter the Data EElement Number. ",
"N", ",", 0)
Release Procs EnterVal
        if (EscEnter) then
            ClearAll
            return FALSE
        endif
Readlib "Deaptutl" QueryDoIt
rt = QueryDoIt()
Release Procs QueryDoIt

if (not rt) then
    return FALSE
endif

Readlib "Deaptutl" ReportTable

opResult = ReportTable("Answer", "Apwtal", "1", "Printer", ",")

Release Procs ReportTable

return opResult
endproc

Writelib AppLib Deapt1S2
Release Procs Deapt1S2

proc Deapt1S3()
private opResult, tbl, rt, EscEnter, alias

    Play "Deaptql" ; put query on workspace
    if (ApplicErrorRetVal) then
        ClearAll
        return FALSE
    endif

    Readlib "Deaptutl" EnterVal ; get value for variable alias
    alias = EnterVal("Enter the Alias Number. ", "N", ",", 0)

    Release Procs EnterVal
    if (EscEnter) then
        ClearAll
        return FALSE
    endif

    Readlib "Deaptutl" QueryDoIt
rt = QueryDoIt()
Release Procs QueryDoIt

if (not rt) then
    return FALSE
endif
Readlib "Deaptuti" ReportTable

opResult = ReportTable("Answer", "Apwtal", "R", "Printer", "")

Release Procs ReportTable

return opResult
deproc

Writelib AppLib Deapt1S3
Release Procs Deapt1S3

proc Deapt1S4()
private opResult, tbl, rt, EscEnter, ali

Play "Deaptq2" ; put query on workspace
if (ApplicErrorRetVal) then
  ClearAll
  return FALSE
endif

Readlib "Deaptuti" EnterVal
; get value for variable ali
  ali = EnterVal("Enter the Alias Number. ", "N", ",", 0)
Release Procs EnterVal
if (EscEnter) then
  ClearAll
  return FALSE
endif

Readlib "Deaptuti" QueryDoIt
rt = QueryDoIt()
Release Procs QueryDoIt
if (not rt) then
  return FALSE
endif

Readlib "Deaptuti" ReportTable

opResult = ReportTable("Answer", "Apwtalid", "R", "Printer", "")

Release Procs ReportTable

return opResult

220
endproc

Writelib AppLib Deapt1S4
Release Procs Deapt1S4

proc Deapt1S5()
private opResult, tbl, rt, EscEnter, aliad

    Play "Deaptq3" ; put query on workspace
    if (ApplicErrorRetVal) then
        ClearAll
        return FALSE
    endif

    Readlib "Deaptuti" EnterVal
    ; get value for variable aliad
    aliad = EnterVal("Enter the Alias Number. ", "N", ",", 0)
    Release Procs EnterVal
    if (EscEnter) then
        ClearAll
        return FALSE
    endif

    Readlib "Deaptuti" QueryDoIt
    rt = QueryDoIt()
    Release Procs QueryDoIt

    if (not rt) then
        return FALSE
    endif

    Readlib "Deaptuti" ReportTable

    opResult = ReportTable("Answer", "Apwtalqd", "R", "Printer", "")
    Release Procs ReportTable

    return opResult
endproc

Writelib AppLib Deapt1S5
Release Procs Deapt1S5

proc Deapt1Menu()
private x, escape, zzzmexit, zzzzexit
zzzexit = FALSE
x = "PRINT Alias List"
while (TRUE)
    Clear

    ShowMenu
    "PRINT Alias List": "Print a list of Aliases and associated Data Element Numbers."
    "PRINT Data Elmnt Als": "Print a list of Aliases based on the input of Data Elmnt ".
    "PRINT Alias Report": "Print a Report on a specific, selected Alias."
    "PRINT Qual Values": "Print the Data Values for a Qualitative Alias."
    "PRINT Quan Values": "Print the Data Values for a Quantitative Alias."
    "Leave": "Leave the Alias Print application"
    Default x
    To x

switch
    case x = "PRINT Alias List":
        ReadLib "Deaptl" Deapt1S1
        escape = Deapt1S1()
        escape = not escape
        Release Procs Deapt1S1
    case x = "PRINT Data Elmnt Als":
        ReadLib "Deaptl" Deapt1S2
        escape = Deapt1S2()
        escape = not escape
        Release Procs Deapt1S2
    case x = "PRINT Alias Report":
        ReadLib "Deaptl" Deapt1S3
        escape = Deapt1S3()
        escape = not escape
        Release Procs Deapt1S3
    case x = "PRINT Qual Values":
        ReadLib "Deaptl" Deapt1S4
        escape = Deapt1S4()
        escape = not escape
        Release Procs Deapt1S4
    case x = "PRINT Quan Values":
        ReadLib "Deaptl" Deapt1S5
        escape = Deapt1S5()
escape = not escape
Release Procs Deapt1S5

case x = "Leave":
  ShowMenu
    "No": "Do not leave the application.",
    "Yes": "Leave the application."
  To zzzmexit

  zzzzexit = (zzzmexit = "Yes")
  escape = (zzzmexit = "Esc")

case x = "Esc":
  escape = FALSE
endswitch

Reset
; reset ErrorProc value
ErrorProc = "ApplicErrorProc"
ApplicErrorRetVal = FALSE

if (zzzexit) then
  return TRUE
endif

if (not escape) then
  x = "PRINT Alias List"
endif
endwhile
endproc

Writelib AppLib Deapt1Menu
Release Procs Deapt1Menu
; set up the error proc for the application

ReadLib "Cwdutl" ApplicErrorProc
ErrorProc = "ApplicErrorProc"
ApplicErrorRetVal = FALSE

; Start the application

ReadLib "Cwdl" CwdlMenu
CwdlMenu()
Release Procs CwdlMenu

Clearall

;******************************
; Cwdl Script
; Paradox 3.0 PAL
; Class Word main menu operations.
; Jack Bacheller 21Jul90
;******************************

AppLib = "Cwdl"
if (not isfile(AppLib + ".lib")) then
  Createlib AppLib
endif

proc CwdlSl()
private opResult

  Readlib "Cwdutl" ViewTable, ToggleForm, VwFldView,
  HelpKey

224
opResult = ViewTable("Apwtcwor", "Apwtcwor", "3", FALSE)

Release Procs ViewTable, ToggleForm, VwFldView, HelpKey

    return opResult
endproc

Writelib AppLib CwdlS1
Release Procs CwdlS1

proc CwdlS2()
private opResult

    Readlib "Cwdutl" EntryTable, KECheck, ToggleForm, EdFldView, HelpKey, EntryCancel, EntryDoIt, RenamePre, RenameSet, SaveList, CreateList, PrintList

    opResult = EntryTable("Apwtcwor", ",", ",", FALSE)

Release Procs EntryTable, KECheck, ToggleForm, EdFldView, HelpKey, EntryCancel, EntryDoIt, RenamePre, RenameSet, SaveList, CreateList, PrintList

    return opResult
endproc

Writelib AppLib CwdlS2
Release Procs CwdlS2

proc CwdlS3()
private opResult

    if (isempty("Apwtcwor")) then
        Message "No records to edit"
        Sleep 3000
        return FALSE
    endif

    if (ApplicErrorRetVal) then
        return FALSE
    endif

    Readlib "Cwdutl" EditTable, ToggleForm, EdFldView, HelpKey, EditCancel, SEditDoIt, SEditDelNoIns
opResult = EditTable("Apwtcwor", "Apwtcwor", ",", "1", FALSE,
               "SEditDoIt", "SEditDelNoIns",
               "[Del] - Delete a record",
               TRUE, FALSE, FALSE)

Release Procs EditTable, ToggleForm, EdFldView,
      HelpKey, EditCancel, SEditDoIt, SEditDelNoIns

return opResult
endproc

Writelib AppLib CwdlS3
Release Procs CwdlS3

proc CwdlMenu()
  private x, escape, zzzmexit, zzzzexit

  zzzzexit = FALSE
  x = "LIST Class Words"
  while (TRUE)
    Clear

    ShowMenu
      "LIST Class Words": "View a list of Class Words.",
      "ADD Class Words": "Add Class Words.",
      "EDIT/DELETE Class WD": "Edit or delete Class
      Words.",
      "PRINT Class Words": "Move to a lower menu for Class
      Word print options.",
      "Leave": "Leave the application"
    Default x
    To x

    switch
      case x = "LIST Class Words":
        ReadLib "Cwdl" CwdlS1
e scape = CwdlS1()
e scape = not escape
      Release Procs CwdlS1

      case x = "ADD Class Words":
        ReadLib "Cwdl" CwdlS2
e escape = CwdlS2()
e escape = not escape
      Release Procs CwdlS2


226
case x = "EDIT/DELETE Class WD":
    ReadLib "Cwd1"  Cwd1S3
    escape = Cwd1S3()
    escape = not escape
    Release Procs Cwd1S3

    case x = "PRINT Class Words":
        Play "Cwdpt"
        x = "PRINT Class Words"
        escape = FALSE

    case x = "Leave":
        ShowMenu
        "No": "Do not leave the application."
        "Yes": "Leave the application."
        To zzzmexit

        zzzzexit = (zzzmexit = "Yes")
        escape = (zzzmexit = "Esc")

    case x = "Esc":
        escape = FALSE
    endswitch

    Reset
    ; reset ErrorProc value
    ErrorProc = "ApplicErrorProc"
    ApplicErrorRetVal = FALSE

    if (zzzexit) then
        return TRUE
    endif

    if (not escape) then
        x = "LIST Class Words"
    endif
endwhile
endproc

Writelib AppLib Cwd1Menu
Release Procs Cwd1Menu
;*******************************************************************************
; Cwdpt Script
; Paradox 3.0 PAL
; Class Word Printing main menu script.
; Jack Bacheller 21Jul90
;*******************************************************************************

Echo Off
Clear
Reset
Cursor Off

; set up the error proc for the application

ReadLib "Cwdptutl" ApplicErrorProc
ErrorProc = "ApplicErrorProc"
ApplicErrorRetVal = FALSE

; Start the application

ReadLib "Cwdptl" Cwdpt1Menu
Cwdpt1Menu()
Release Procs Cwdpt1Menu

Clearall
;*****************************************************************************
; Cwdptl Script
; Paradox 3.0 PAL
; Class Word Printing main menu operations.
; Jack Bacheller 21Jul90
;*****************************************************************************

AppLib = "Cwdptl"
if (not isfile(AppLib + ".lib")) then
   Createlib AppLib
endif

proc CwdptlS1()
private opResult

   Readlib "Cwdptutl" ReportTable

   opResult = ReportTable("Apwtcwor", "Apwtcwor", "R", "Printer", "")

   Release Procs ReportTable

   return opResult
endproc

Writelib AppLib CwdptlS1
Release Procs CwdptlS1

proc CwdptlS2()
private opResult, tbl, rt, EscEnter, name

   Play "Cwdptql" ; put query on workspace
   if (ApplicErrorRetVal) then
      ClearAll
      return FALSE
   endif

   Readlib "Cwdptutl" EnterVal
   ; get value for variable name
   name = EnterVal("Enter the Class Word Name. ", "A20", ", 0)

   Release Procs EnterVal
   if (EscEnter) then
      ClearAll
      return FALSE
   endif

229
Readlib "Cwdptutl" QueryDoIt
rt = QueryDoIt()
Release Procs QueryDoIt

if (not rt) then
    return FALSE
endif

Readlib "Cwdptutl" ReportTable

opResult = ReportTable("Answer", "Apwtcwor", "1", "Printer", ")

Release Procs ReportTable

return opResult
endproc

Writelib AppLib CwdptlS2
Release Procs CwdptlS2

proc CwdptlMenu()
    private x, escape, zzzmexit, zzzzexit

    zzzzexit = FALSE
    x = "PRINT Class Word Lst"
    while (TRUE)
        Clear
        ShowMenu
            "PRINT Class Word Lst": "Print a List of all of the
            Class Words.",
            "PRINT CLASS Word": "Print a detailed report on a
            specific, selected Class Word.",
            "Leave": "Leave the application"
        Default x
        To x

        switch
            case x = "PRINT Class Word Lst":
                ReadLib "Cwdptl" CwdptlS1
                escape = CwdptlS1()
                escape = not escape
                Release Procs CwdptlS1

            case x = "PRINT CLASS Word":
                ReadLib "Cwdptl" CwdptlS2
                escape = CwdptlS2()
escape = not escape
Release Procs Cwdpt1S2

case x = "Leave":
    ShowMenu
        "No": "Do not leave the application."
        "Yes": "Leave the application."
    To zzzmexit
    zzzzexit = (zzzmexit = "Yes")
    escape = (zzzmexit = "Esc")

    case x = "Esc":
        escape = FALSE
endswitch

Reset
; reset ErrorProc value
ErrorProc = "ApplicErrorProc"
ApplicErrorRetVal = FALSE

if (zzzzexit) then
    return TRUE
endif

if (not escape) then
    x = "PRINT Class Word Lst"
endif
endwhile
endproc

Writelib AppLib Cwdpt1Menu
Release Procs Cwdpt1Menu
; Pwd Script
; Paradox 3.0 PAL
; Prime Word Main menu script.
; Jack Bacheller 21Jul90

Echo Off
Clear
Reset
Cursor Off

; set up the error proc for the application

ReadLib "Pwdutl" ApplicErrorProc
ErrorProc = "ApplicErrorProc"
ApplicErrorRetVal = FALSE

; Start the application

ReadLib "Pwd1" Pwd1Menu
Pwd1Menu()
Release Procs Pwd1Menu

Clearall
Paradox 3.0 PAL
Prime Word main menu operations. Printing is included.
Jack Bacheller 21Jul90

AppLib = "Pwd1"
if (not isfile(AppLib + ".lib")) then
  Createlib AppLib
endif

proc Pwd1S1()
private opResult
  Readlib "Pwdutl" ViewTable, ToggleForm, VwFldView, HelpKey
  opResult = ViewTable("Apwtpwor", "Apwtpwor", "1", FALSE)
  Release Procs ViewTable, ToggleForm, VwFldView, HelpKey
  return opResult
endproc
Writelib AppLib Pwd1S1
Release Procs Pwd1S1

proc Pwd1S2()
private opResult
  Readlib "Pwdutl" EntryTable, KECheck, ToggleForm, EdFldView, HelpKey, EntryCancel, EntryDoIt, RenamePre, RenameSet, SaveList, CreateList, PrintList
  opResult = EntryTable("Apwtpwor", ",", ",F", FALSE)
  Release Procs EntryTable, KECheck, ToggleForm, EdFldView, HelpKey, EntryCancel, EntryDoIt, RenamePre, RenameSet, SaveList, CreateList, PrintList
  return opResult
endproc
Writelib AppLib Pwd1S2
Release Procs Pwd1S2

proc Pwd1S3()
private opResult

  if (isempty("Apwtpwor")) then
    Message "No records to edit"
    Sleep 3000
    return FALSE
  endif

  if (ApplicErrorRetVal) then
    return FALSE
  endif

  Readlib "Pwdutl" EditTable, ToggleForm, EdFldView, HelpKey, EditCancel, SEditDoIt, SEditDelNoIns

  opResult = EditTable("Apwtpwor", "Apwtpwor", ",", "2", FALSE,
                      "SEditDoIt", "SEditDelNoIns",
                      "[Del] - Delete a record",
                      TRUE, FALSE, FALSE)

  Release Procs EditTable, ToggleForm, EdFldView, HelpKey, EditCancel, SEditDoIt, SEditDelNoIns

  return opResult
endproc

Writelib AppLib Pwd1S3
Release Procs Pwd1S3

proc Pwd1S4()
private opResult

  Readlib "Pwdutl" ReportTable

  opResult = ReportTable("Apwtpwor", "Apwtpwor", "R",
                          "Printer", ")

  Release Procs ReportTable

  return opResult
endproc
Writelib AppLib PwdlS4
Release Procs PwdlS4

proc PwdlMenu()
private x, escape, zzzmexit, zzzzexit

zzzzexit = FALSE
x = "LIST Prime Words"
while (TRUE)
  Clear
  ShowMenu
  "LIST Prime Words": "View a list of Prime Words."
  "ADD Prime Words": "Add Prime Words."
  "EDIT/DELETE Prime WD": "Edit or delete Prime words."
  "PRINT Prime Words": "Print a list of Prime Words."
  "Leave": "Leave the application"
  Default x
  To x
  switch
  case x = "LIST Prime Words":
    ReadLib "Pwd1" PwdlS1
    escape = PwdlS1()
    escape = not escape
    Release Procs PwdlS1
  case x = "ADD Prime Words":
    ReadLib "Pwd1" PwdlS2
    escape = PwdlS2()
    escape = not escape
    Release Procs PwdlS2
  case x = "EDIT/DELETE Prime WD":
    ReadLib "Pwd1" PwdlS3
    escape = PwdlS3()
    escape = not escape
    Release Procs PwdlS3
  case x = "PRINT Prime Words":
    ReadLib "Pwd1" PwdlS4
    escape = PwdlS4()
    escape = not escape
    Release Procs PwdlS4
  case x = "Leave":
    ShowMenu
"No": "Do not leave the application.",
"Yes": "Leave the application."

To zzzmexit

zzzzexit = (zzzmexit = "Yes")
escape = (zzzmexit = "Esc")

case x = "Esc":
   escape = FALSE
endswitch

Reset
; reset ErrorProc value
ErrorProc = "ApplicErrorProc"
ApplicErrorRetVal = FALSE

if (zzzzexit) then
   return TRUE
endif

if (not escape) then
   x = "LIST Prime Words"
endif
endwhile
endproc

Writelib AppLib PwdlMenu
Release Procs PwdlMenu

236
LIST OF REFERENCES

1. The Deputy Secretary of Defense Memorandum dtd 4 Oct 1989, DOD Corporate Information Management.


7. Interview between Phillip Olson, Lieutenant Colonel, USA, Corporate Information Management (DOD), Washington, DC, and the author 30 April, 1990.


INITIAL DISTRIBUTION LIST

1. Defense Technical Information Center
   Cameron Station
   Alexandria, Virginia 22304-6145

2. Library, Code 52
   Naval Postgraduate School
   Monterey, California 93943-5000

3. Commandant of the Marine Corps
   Code TE 06
   Headquarters, U.S. Marine Corps
   Washington, D.C. 20380-0001

4. Computer Technology Programs, Code 37
   Naval Postgraduate School
   Monterey, California 93943-5000

5. Professor Daniel R. Dolk, Code ASDK
   Naval Postgraduate School
   Monterey, California 93943-5000

6. Professor Magdi N. Kamel, Code 54KA
   Naval Postgraduate School
   Monterey, California 93943-5000

7. Captain John S. Bacheller USMC
   409 Hilary Dr.
   Tiburón, California 94920

8. HQDA ODISC4
   Interoperability and Standards Office
   ATTN: SAIS-ADO (COL. R. Potts)
   The Pentagon, Room 1C670
   Washington, D.C. 20310-0107

9. Corporate Information Management (CIM)
   ATTN: LTCOL. P. Olson
   The Pentagon, Room 1C535
   Washington, D.C. 20310

239