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THE WEST POINT DATABASE CONVERSION PROJECT -- FROM A NETWORK TO A RELATIONAL DBMS

by

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and
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In this thesis, we propose a relational database design based on the information which the United States Military Academy is required to maintain, the frequency of use of this information, as well as current and future applications. Included in this design are the Enhanced Entity Relationship Diagram (reflecting the entities and their relationships to one another), the attributes for each entity and relationship (located in the tables), and the functional dependencies from which the diagram and tables were formed. A prototype, reflecting this design, has been built in the Oracle DBMS, which is expected to be the target system. The source data is derived from a UNISYS-based network DBMS model that is used to support the current application. As a result, a database conversion process will be executed.

Relative to the conversion process, we have included general considerations for migrating data. These considerations include data validation, maintaining data quality, and a discussion of general versus specific methodologies for data migration. This thesis discusses and shows how the data conversion can actually be accomplished, including the intermediate file format, and a demonstration of how actual queries may be executed on a sample database using the proposed relational design.

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The West Point Database Conversion Project -- From a Network to a Relational DBMS

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ABSTRACT

In this thesis, we propose a relational database design based on the information which the United States Military Academy is required to maintain, the frequency of use of this information, as well as current and future applications. Included in the design are an Enhanced Entity Relationship Diagram (reflecting the entities and their relationships to one another), the attributes for each entity and relationship (located in the tables), and the functional dependencies from which the diagram and tables were formed. A prototype, reflecting this design, has been built on the Oracle DBMS, which is expected to be the target system. The source data is derived from a UNISYS-based network DBMS model that is used to support the current application. As a result, a database conversion process will be executed.

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ACKNOWLEDGMENTS

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I. INTRODUCTION

The United States Military Academy (USMA) at West Point, New York, has a maximum of 4,400 cadets at any one time. Information is maintained not only on current cadets, but on graduates, ex-cadets, and applicants as well. This information includes critical data used in making decisions on admissions, cadet personal data, military development evaluations, disciplinary actions, leadership abilities, and academic achievement information. Reports are constantly being generated for internal and external use on all aspects of the information that is required to be maintained. These reports include the profiles of entering and graduating classes, specific information about a particular cadet or class, and information about required classes or military training available to cadets. With the volume of records being maintained and the amount of reports being generated, West Point requires an efficient database in order to save valuable man-hours and produce timely and accurate reports.

Recent developments of relational database technology has made relational DBMS reliable and efficient, thus becoming the system of choice. Many organizations have therefore chosen relational systems and many have re-examined their current database systems, considering or planning to convert to the relational model. The United States Army and USMA fall into this category of organizations. At the time USMA's database was designed and implemented, a network schema appeared to be the best solution, allowing records to have more than one owner record (a capability not offered in a hierarchical design). The relational design, however, provides even more flexibility. This increased flexibility, such as allowing for ease of expansion of the various records of the database, is the major factor in desiring to convert USMA's database to a relational Database Management System (DBMS). With the ever changing environment at West Point, as the recent academic program overhaul demonstrates, there exists a need for a method of adjusting the current database without constant redesign.

A. OBJECTIVES

Our primary objective is to present USMA with a relational database schema to encompass the functionality of the current system and incorporate desired features for future needs. As part of this objective we hope to provide USMA with a design that logically ties together the aspects of the Cadet, Schedule, Cadet Candidate, and Field Force portions of the database, which are currently implemented as separate, independent applications. This logical representation of the database as a single entity is important because the three major proponents, the Dean's Office, the Commandant's Office, and the Admissions' Office, all interact to some degree and sometimes overlap on their responsibilities for maintaining certain data fields, as well as on the usage of those fields. We feel that this unified representation of the database will encourage the different proponent organizations to work together, and discourage the "we--they" attitude so often encountered in this type of situation.

Our secondary objective is to provide USMA with a working prototype of part of the relational database design. This prototype is divided into two major sections: the first section being how the conversion may actually be accomplished, and the second section showing how common queries may be performed, using Oracle as the interface to the database. Included in the thesis on how the conversion may actually be accomplished is the method used for converting the existing database into an intermediate file format, including the definition of the intermediate file format itself, and the method for loading the data from the intermediate file format into the actual Oracle tables. We will illustrate, using Oracle features such as menus, forms, and reports, how queries can be performed on a selected portion of the prototype database.

In addition to the design and prototype objectives, we will also discuss the advantages and/or disadvantages our relational design would have over the currently operating network model. Additionally, we will explain why we created the design the way we did, why careful data migration is so important, and what possible future directions West Point can pursue. The objective of this information is to explain our reasoning and results to West Point, so that they may be able to better understand our development process and can make better decisions on what part, if any, to implement.

B. ORGANIZATION

Chapter II includes background information concerning general considerations for migrating data between databases. These considerations include data validation, maintaining data quality, and a general versus specific methodology for migrating data. Chapter III contains a description of the application for the use of the database by its various responsible proponents. In Chapter IV we present the new database design, and a description of the Enhanced Entity Relationship (EER) diagram including newly added features. Chapter V covers specific concerns for the West Point database translation, including a discussion of the loader modules, how the conversion may be accomplished using Oracle, and the development path of the prototype system. Conclusions and recommendations are located in Chapter VI. Addressed in Chapter VI are questions like the following: is the relational design better than the network design for this application, and will this change help or hinder future development of the West Point database? Appendices follow, containing the functional dependencies, relational data tables (in third, or higher, normal form), the intermediate file formats, and the users' guide for the prototype.

For the purpose of separation of responsibility in the performance of this thesis, the duties were carried out as follows: The introduction, the study of the problem of the current existing system, the decoding of information from the data dictionary, the communication with West Point to learn of the applications and their environments, the acquisition of requirements for the target system, and the conclusion were equally shared by both authors. In addition, the specification of the data in the target system, the merging of various data to eliminate duplicates, and the formulation of the entities were also shared. The design of the target database, the specification of the functional dependencies, and the formulation of relations, were the major responsibility of Captain Wilson. On the other hand, Captain Guilmette concentrated on the translation of data from the current West Point database system, and had the major responsibility of designing the casual user interface and the implementation of the programs to support these casual user queries. The other various parts of implementation were the shared responsibilities of both authors.

II. BACKGROUND

Database conversions are very complex. An important, but often overlooked, aspect of converting from one database management system to another, is the actual translating of data from the source to the target system. A mere transferring of data will not suffice. Care must be taken to ensure that the data is correct and stays correct, or the new system will be inaccurate and of little use. This chapter focuses on data validation, the maintenance of data quality, and a general versus specific methodology for data translation. In the area of data validation, we will concentrate on common data errors resulting from unexpected data and briefly discuss integrity constraints, with some specific examples taken from the current West Point database. Maintenance of data quality includes the causes and prevention of incorrect data. And finally, we will discuss the advantages and disadvantages of a general versus specific methodology for translating data.

Although this chapter will cover some of the more important aspects of data translation, it is important to note that there are several key issues in this area that are beyond the scope of this thesis. One such issue is how to handle the errors once they are discovered. Do you attempt to correct the errors, or just detect without correcting? A sub-issue of attempting to correct the errors is when to do it, at the source file before translating, or at the target file after the translation is completed. These are issues that cannot be ignored, and are covered in greater detail in a complementary Naval Postgraduate School thesis entitled *A Methodology for Handling Data Errors and Inconsistencies in*

Database System Conversions, written by Mark Hendrickson, which directly addresses these issues concerning the USMA data conversion [Ref. 3].

A. DATA VALIDATION

Data validation is an extremely important part of translating data between databases. Included within data validation is ensuring the correctness of the data before translating it, as well as after it has migrated to the target system. Just because data is correct before it is translated does not mean that it will still be correct once the data is in the new system. Common errors include unexpected data and misrepresented integrity constraints. One important aspect of data validation is checking the information to determine to what degree the conversion process is an information preserving mapping [Ref. 5]. Not only do you want to ensure that the data you have is correct, but also that none of the data, or derivable information, has been lost. We will now further explore some of the common data errors, with illustrative examples from West Point's cadet database. Integrity constraints will only briefly be addressed. A more indepth coverage of this topic can be found in Mark Hendrickson's thesis [Ref. 3].

Unexpected data can cause a variety of errors. One such example, is unexpected data in a certain field of a record. This type of error is called an error in validation representation of data, and can be detected when an element of a field does not comply with the restrictions placed on it. This error can be present, for example, in the Cadet-Illness-Injury-Record of the West Point database. Position one of the Cadet-Injury-Body-Part of this record can only be an "R" for right, an "L" for left, or a " " for not applicable. So, if any other letter exists in position one, it is an error. Another common data error is an unacceptable value for a specific field. This error occurs when you have a numeric field that has a restricted allowable range of values. We can illustrate this by looking at the Father-Service-Academy field of the Cadet-Personal-Data-Record. The allowable range of values for this field is 0-5, 0 indicating none, 1 indicating United States Military Academy, 2 representing Naval Academy, 3 representing Air Force Academy, 4 for Coast Guard, and 5 for Merchant Marine. So, any number greater than 5 would be an error , because it is outside the allowable range. Another frequent error is an error of omission. This error occurs when a mandatory occurrence field, a field that must always have a data element, is left blank. A prime example for this kind of error would be if the Cadet-SSAN field of the Cadet-Personal-Data-Record were left blank. Many other records are keyed off this field and would not be able to be linked to the proper cadet, without this field being filled. These types of errors are common and relatively easy to correct.

Other easy to detect errors, which will not be illustrated by West Point database examples, include errors in record ordering, naming conventions, and record-precedence relationships [Ref. 5]. Record ordering errors occur when records do not appear in the required order, i.e. alphabetically by name or numerically by social security number. Errors in naming conventions are apparent when the rules for certain naming conventions are not followed. For example, if all spellings of "Cadet" are supposed to be coded "CDT" and one is coded "CAD" this would be a naming convention error. Record-precedence relationship errors occur when one type of record must precede another type of record, and it does not. Again, these types of errors are easily detected by doing simple checks of a single field.

Errors that require checking more than one field are more difficult and require much more time to detect. Integrity constraint errors such as contextual validity, validity which requires cross checking, and validity which requires computation, fall into this category. Contextual validity means that the validity of a data instance can only be determined in the context of other data instances. [Ref. 5] An example of this exists in the Commandant-Year-Record. The number of Study-Periods-Auth-Per-Sem and Half-Days-Auth-Per-Sem can only be determined by the Act-Participation-Category in conjunction with the cadet regulations. A cadet in the Dean's List Category is authorized more study periods and half days than a cadet in the Top 30-60% Category, etc. In order to determine an error in the Study-Periods-Auth-Per-Sem field, for example, the *Act-Participation-Category must first be checked.* Validity which requires cross checking means that a data element that exists in one record must exist in another. For example, social security number exists in the Cadet-Personal-Data-Record and must also exist in the Cadet-Demerit-Record. Another type of validity which requires cross checking error is when one type of record cannot exist without the presence of another type of record. Again we can use the Cadet-Demerit-Record and Cadet-Personal-Data-Records to illustrate this point, because a Cadet-Demerit-Record cannot exist without a Cadet-Personal-Data-Record existing on the same cadet. Simply stated, a person must first exist as a cadet at the academy before he can receive demerits. An error in validity which requires computation is another error that is difficult to detect. One such field that requires computation is the Term-Acad-QPA field of the Cadet-Acad-Year-

Term-Record. To determine the Term-Acad-QPA you must divide the Term-Acad-Quality-Pts by the Term-Acad-Credit-Hrs. Errors in fields of these types are especially difficult to detect because they require cross checking more than one field and determining if the mathematical computations have been performed correctly.

B. MAINTAINING DATA QUALITY

It is not sufficient to just detect and correct errors. A conscious effort must be made to ensure the data stays correct or you will be in an endless circle of detecting and correcting. To maintain good data quality, you must first gain an awareness of what the possible causes of data errors are, and why database conversions make data extremely vulnerable to errors. Then, safeguards can be established to prevent these errors and preserve the data quality.

Data may have poor quality for several reasons. The five major causes of these errors are as follows: the data was never correct, it was altered by human error, it was changed by an incorrect program, the data was altered by a machine error, or it was destroyed by a major disaster [Ref. 2]. If the data was not correct at the time of input, it will not be correct at the time it is needed for processing. Here the old adage "Garbage In, Garbage Out" (GIGO) comes to mind. Humans are not perfect and are not always well versed in correct procedures for handling data. Their lack of experience on the system and perhaps their inattention to detail can lead inadvertent and erroneous changes to data which was once correct. As everyone who has ever written a program knows, several iterations of programs may be written before you get a correct version. This seemingly correct version, or previous incorrect versions, may actually contain a hidden bug which is altering data. Computer hardware is not always flawless either, sometimes data errors result from machine hardware errors. Major disasters or catastrophes can encompass a variety of events such as mechanical failure of a disk, a flood, or an earthquake. Knowing these primary causes of poor data quality is the first step in developing a program to maintain good data quality.

Databases, because of their nature of multiple users sharing data, are especially vulnerable to data errors. Converting from one database management system to another opens even more avenues for data corruption. For example, a database conversion may involve alterations to the physical structure of the database, such as changing the format and encoding of data or the arrangements of items within records. Other changes may include changing the logical structure of the database, by either adding or deleting access paths to accommodate new performance requirements or changing the semantics of the data by either modifying the relationship between record types or adding or deleting items in records. Changing the relationship between record types can result from changing a one-to-many relationship to a many-to-many relationship, etc. Additionally, derivable information in the source database may become explicit information in the target database, and changes in integrity constraints may result. These possible changes to actual data elements and their structures greatly increase the chances of data corruption during a database conversion. So, extra precaution must be exercised at this time to ensure good data quality is maintained.[Ref. 1]

After determining how errors can occur, and what type of errors are the most common, preventive action must be taken to guard against these occurrences and to detect them should they happen. Input validation is important in an effort to prevent GIGO. The first step is to ensure that the original data is correct. A survey of programmers has shown that roughly 40% of the PROCEDURE divisions of commercial COBOL programs consists of error-checking statements [Ref. 2]. This large percentage emphasizes the importance of input data error checking. Human and program error are much more difficult to guard against. It takes human knowledge to determine if a validation rule has been violated. An audit trail, a log of all changes made to a database, can be used to detect the cause of the error. Before and after images of the database are stored when changes are made. Included with these changes are the date, time, and name of the procedure causing the change, and sometimes the name of the responsible programmer. Additional training can be arranged for those individuals who are generating the most errors. Restarting after a hardware failure is normally left to the operating system. But, the database's audit trail can be used, in conjunction with a checkpoint facility that gives a snapshot of the entire machine condition at a moment in time. The status of the database can then be recovered from the time of the checkpoint and further updated using the audit trail log. To recover good data after a major disaster, the system, new or old must be reload with a backup copy of the data that was hopefully stored at an alternate site. Ensuring data quality is no easy task and does not come without cost. But, the overhead of maintaining good data quality is well worth the cost and will save a lot of time, money, and headaches in the long run.

C. GENERAL VS. SPECIFIC METHODOLOGY

The conventional approach to database conversion is to develop specialized programs to transfer the data from a specific source system to a specific target system. Since this method seemed expensive and time-consuming because the programs were developed to be used only once and on particular systems, the possibility of a general methodology for conversion began to be explored in the early 1970's.

By the end of the 1970's, several prototype general database models had been developed. These systems included the Michigan Data Translator, the IBM XPRS system, and Bell Laboratories ADAPT system. These prototypes supported the technical feasibility of building generalized systems. Several important issues remained to be answered, however. Included in these issues are the following questions: Are the generalized systems complete enough to be used in actual conversions, and if not what is needed to complete them? Can the people involved in the data conversion learn and use the new languages? What, if any, is the productivity gain associated with the generalized approach? These very important questions must be answered before the full benefits/cost of a generalized approach can be realized.[Ref. 1]

Many factors must be considered when determining the cost-effectiveness of a generalized data translator versus a specific one. These factors include the ease of learning and using the higher-level languages designed for the generalized translators, the overall machine efficiency and the correctness of the results produced by the conversion, the ability to respond quickly to changes in the conversion requirements, debugging costs, the ability to use converted data in old applications, the ability to provide verification of the correctness of the data conversion, and the capabilities for the detection and control of data errors. These factors must be considered in weighing the advantages and disadvantages of a general versus specific method for data conversion.

In further exploring the aforementioned factors, we can venture an opinion as to which system, generalized or specific, we feel is the most beneficial. The higher-level nonprocedural languages are fairly user friendly and relatively easy to learn. But, the fact that a new language has to be learned at all is a drawback for the generalized approach. Methods of detecting and controlling data errors for generalized systems are not yet fully developed. Specific conversions can handle data errors much better. Conversion program maintenance, the ability to respond to requirement changes, should be just as easy with either methodology. Requirement changes are fairly common and are thus somewhat planned for in advance. We feel that debugging costs will most likely be less for generalized systems because the great majority of the bugs will already have been worked out before it is implemented. For a specific system, on the other hand, the costs will be greater because the debugging will be done as the system is being written and implemented. Another advantage of the general methodology is the ability to link back converted data to old applications. Verif'cation of correctness is an important aspect of data conversion, and will be a costly venture for either methodology.

Database conversions are rarely done more than once, if at all, in a given system. In view of the infrequency of this opera.ion and the advantages and disadvantages listed above, we feel that it is probably more beneficial to use a conversion method that is specific to your particular system, than to use a general methodology. The fact that very little recent (late 1980's) literature can be found on general methodology conversion systems seems to further support this opinion. Personnel involved in developing these general methodology prototypes have not found it to be a very lucrative prospect, because companies are not willing to pay exorbitant fees for a set of programs that may only be used once and were not specifically designed for their system. Therefore, we think that a specific conventional conversion process is more cost effective, and have employed this process in developing our prototype for this thesis.

III. WEST POINT DATABASE APPLICATION

Users of the Data Base Management System of the United States Military Academy, West Point, New York, are divided into three major organizations: the Director of Admissions (DAD), the Commandant (USCC), and the Dean. The Computer Systems Division (CSD), Directorate of Information Management (DOIM), has overall responsibility for the database. The Corps of Cadets consists of a maximum of 4,400 cadets at any given time. The Director of Admissions is the proponent of all information about a cadet candidate prior to admission to West Point. When the candidates are admitted, Admissions transfers proponency of selected data items to the Dean or Commandant. The Commandant is the proponent of data items relating to individual and military personnel records including physical qualities, athletic abilities, leadership attributes, and disciplinary actions of the Corps of Cadets. The Dean is the proponent of data items relating to books, courses, grades, transcripts, and other academic attributes. Proponents may delegate the functions associated with proponency for specific data items to the subordinate organization best qualified to manage them.[Ref. 6]

A. THE DIRECTOR OF ADMISSIONS' DATABASE REQUIREMENTS

The Director of Admissions is responsible for the recruitment, initial testing, and appointment of applicants (future cadets) to the United States Military Academy . DAD is further responsible for a field force of USMA graduates (retirees/reservists) whose responsibility is to assist in the cadet recruitment process.

As application packets are received from the applicants in the field, the information is entered into the database. This information includes the candidate's social security number, full name, mailing address, telephone number, sex, height, weight, race, birthday, state of domicile, and USMA genealogy. Also needed are the status, rating, and dates of the following aspects of the applicant's file: academic evaluation, physical aptitude, and medical history. Other information includes projected USMA graduation year, number of nominations awarded, admissions decisions scores (whole candidate score, college entrance exam rank, PAE score, leadership potential score, and file evaluation score), educational history (including high school and prep school data), and academic test scores (SAT and ACT). Admissions converted scores are obtained through a conversion, consolidation, and/or evaluation process of raw data. Communications status, admissions control data and admissions control dates are all groups of necessary data to track the progress of an applicant's file. Also needed is the sports information related to an applicant's ability to participate in intercollegiate (NCAA) athletics, consisting of the applicant's sport, position(s) played, high school and the Office of the Directorate of Athletics (ODIA) coaches' ratings, the applicant's ability rating in the sport, and an ODIA interest indicator.

Admissions Participants (liaison officers) are usually graduates of USMA, who are retired or in a reserve status and whose job is to recruit potential cadets to attend West Point. These individuals make up a part of the field force. The Admissions Participants information includes a unique identification number, complete name, social security number, address, telephone number, position, and business telephone number (including autovon). Also the applicant's branch of service, MOS, rank, and status are stored. The month and year joined, USMA class year, training code and year, hand-receipted equipment status, individual and active duty training times, and special event codes and dates are also needed.

Educators are individuals who also assist in the recruitment process for USMA. These individuals comprise the other half of the field force. They work at junior and senior high schools, are part of the news media, or come from other walks of life. Educator information consists of the educator's name, title, address, month and year joining the field force, organization code, state, and zip-area, inactive date and site identification.

High schools are the primary source for USMA to obtain information for recruiting purposes. DAD uses this information for catalog mailings and other promotional materials. The high school data consists of the high school's uniquely identifying, nationally assigned number (Princeton number), address, location code, USMA interest indicator, quality code, percentage of students that go on to college, USMA interest in a particular sport, Admissions Participant identifier, and physical aptitude test site for the school.

Test sites are the locations where the USMA physical aptitude examination (PAE) is given, and are normally high schools or armories in the local community. Applicants are required to take the PAE prior to submission of the application packet to USMA. Test site information includes a unique site code, location and responsible individuals for the PAE site (including installation name and OIC name and title), and the dates, times, and numbers of applicants assigned to the particular PAE sites.

Nomination Authority information is all the information about the individuals (President/Senators/Congressmen) that are authorized to nominate applicants to attend USMA. This information includes a unique identification code, the individual or position authorized to appoint cadets to USMA, the individual's assistant, and a description of how the authorized vacancies are filled. The following information must be kept concerning an individual's nomination: the nomination vacancy (including state, district, and vacancy), type of nomination, and status of nomination.

B. THE COMMANDANT'S OFFICE DATABASE REQUIREMENTS

The Commandant (USCC - United States Corps of Cadets) is composed of the following subordinate organizations: S1 (Personnel), S3 (Operations), DCA (Directorate of Cadet Activities), DPE (Department of Physical Education), DMI (Department of Military Instruction), Regt (Regiments USCC), and SAH (Special Assistant for Honor). USCC is responsible for personal, military, athletic, physical, leadership, and discipline attributes of the members of the Corps of Cadets.

In the area of individual personnel records, in addition to the information kept on cadet candidates, USCC needs the following information kept on a cadet: ethnic group, blood type, current height, current weight, the number of pull-ups a cadet can currently perform, graduation year, a uniquely identifying 5 digit alpha number, short name (38 characters), and sex. The following additional information is also needed: whether a cadet is separated, a turnback or comeback, a deferred turnback, or a term-end separation. Additionally, the cadet's permanent company, permanent regiment, first company, first regiment, second company, second regiment, religious preference, and race must be kept. Whether or not a cadet meets all prerequisite course requirements, all graduation requirements, and all field of study requirements, and what is the cadet's field of study, area of study, major, and sub-field within the major are also required data items. Whether or not a cadet has been evaluated by a TAC officer for a summer assignment, meets the prerequisites for airborne or ranger school, serves punishment tours by room confinement or walking the area, and is medically qualified for a summer assignment are also required cadet information. Additionally, the APFT score, run time, number of push-ups, and number of sit-ups are needed. Further, a code to describe cadet conduct (satisfactory, deficient, probation, suspended separation), and the current academic QPA are also necessary. Regardless whether or not the cadet participated in an honor board (along with the year, month, and day of that board), a grade report indicator, the name, rank, and department of the cadet's sponsor, and the cadet's activity participation category (dean's list, top 60%, other) are all areas of interest for the Commandant's office.

The following personal data items are also needed: cadet's long name, the title or rank, name, and address for both parents, and an indicator of whether or not each parent is living. Additionally, each parent's occupation, graduation from a military academy, if any, including the academy name and graduation year, the rank, status (active, retired, etc.) and component of service is needed. Also, an emergency phone number, the cadet's city and state of domicile, birth year, month, and day, and birth city and state are also required. Whether a cadet's mother or father have ever been in the military, including the branch of service and present status, is also a piece of the personal information that must be kept, though mainly for statistical purposes. In addition to individual information, information must also be kept for each class of cadets, including graduation year, entrance class size, graduation class size, and the class size for the beginning and end of the academic year and term.

Entrance data, for use in statistics and placement of cadets, must be kept. This data includes entrance year, month, and day, entrance district and nomination, entrance height, weight, number of pull-ups, swim class, recruit program, and one and one half mile run results from July and August, English expression test results, English predictor rank, TSWE score, Nelson Denny scores including vocabulary, vocabulary percentage, comprehension, comprehension percentage, reading rate, reading percentage, vocabulary comprehension percentage, and a code to indicate an old or new SAT or ACT test version.

Prior college, prior service, award, graduation, and class status information are all areas of responsibility for USCC. Prior college information must be kept for every college attended. The prior college information includes the name of the college, the number of months attended, and the address of the college. Prior service data must also be kept on each cadet who had prior service. This information includes Prep School name, service component, regular or reserve status indicator, number of service months, military MOS, current active duty indicator, and valorous citations and wounds received. Award, graduation, and class status records must also be kept. The award data must contain the award year, month, and day, the award code, an award occurrence number to distinguish between multiple awards on a given day, and the award name. The graduation information includes graduation year, month, and day, graduation status indicator, commission year, month, and day, commission indicator, basic branch, detail branch, and the GRE verbal, analytical, and quantitative scores (if the GRE has been taken). This information is required to be maintained for each cadet in the last semester before graduation. Each cadet may have more than one class status record, or none at all. A status occurrence number will be used to differentiate between multiple status records for a single cadet. Class status information includes class separated from, withdrawal year, month, and day, separation year, month, and day, disposition indicator, departure year, month, and day, separation indicator, and turnback or comeback year, month, and day.

USCC is responsible for tracking cadet illnesses and injuries. The following information must be kept for each illness: year, month, and day of the illness, time when the cadet reported from sick call to duty, time when the cadet went on sick call as indicated by USMA Form 2-515 (Cadet Excusal Form and Company Sign Out/In Ledger), type of sick call cadet reported on (regular, emergency, other), date through which the cadet is excused (not required if the same as the date of illness), and disposition (i.e. bedrest, full duty, hospital). Additionally, cadet injury data must be kept, including the year, month, and day of the injury, the injury occurrence number to distinctly identify different injuries, the activity injured in, the body part injured, and the nature of the injury.

USCC is also responsible for the leadership development of cadets. To track this development, leadership records must be kept for every detail period (four per year), for every year, at the academy, along with the number of times a cadet goes on sick call during a detail period. Data includes location code, assignment, position held, rank, and the regiment, battalion, company, platoon, and squad to which assigned. All summer cadet detail records are created in April-May. The Plebe Parent Weekend position held is another attribute of the leadership data. Leadership rating data includes a cadet's company and regiment at the time of the leadership rating, the tactical officer, company commander, platoon leader, squad leader, first sergeant's evaluation of the cadet, and the cadet's overall rating. Also, the military development index for the term, cumulative, and cumulative order of merit must be kept, as well as the summer leadership grade, and the status whether or not the individual has had a development or conduct board during the detail. As a part of leadership training, USCC must ensure that summer assignment orders are issued, reflecting assignments, locations, whether or not the assignment is overseas, and the dates of the assignment.

The Commandant's office is also responsible for discipline. They must know the number of demerits and disciplinary tours a cadet receives, and the number of demerits a cadet receives in a month, in order to determine whether or not he exceeded his maximum monthly allowable. Demerit data includes the year, month, and day the cadet was awarded the demerits, the offense code and number to differentiate between offenses, the number of demerits, area tours, and room tours awarded the cadet for a particular offense during the present month, the name, rank, and organization of the person reporting the delinquency on the USMA Form 2-1, and the actual comment written (up to 6 lines) on the 2-1 and the year, month, and day it was written. The year, month, day and time the demerit was posted, as well as the commander's recommendation, must also be kept. The following data items are also required: an indicator of whether or not the offense was rescinded, leader dimension and leader dimension comment line indicators, incentive award field, and reduced privilege field. The demerit information must be updated as it occurs. Monthly demerit data includes the academic year designation, the calendar month in which the cadet received the demerits, the number of demerits and tours awarded a cadet during a particular month, the number of demerits allowed to be accumulated during a particular month, the cumulative amount of demerits (without tours) awarded a cadet in a month, the cumulative number of demerits awarded a cadet as a result of tours or board proceedings during a given month, and the cumulative number of demerits awarded a cadet with tours or board proceedings. Additionally, a yearly total must be kept in order to determine whether or not the yearly allowable amount has been exceeded and the cadet needs to be put on probation. This yearly data includes the demerit year, probation end year, month, and day, demerits received, special penalty tours, and special demerits. Monthly and yearly demerit records are initiated on each cadet and updated as required, each time the demerit record is updated.

Athletics and extra-curricular activities are also areas of responsibility for USCC. In this area, USCC must keep track of the activities a cadet participates in (updating is accomplished through the cadet activities system, which includes DPE, ODIA, and DCA), the activity start year, month, and day, the number of trips/games a cadet participates in while a member of the activity, the activity type, the type of award received (major A, minor A, monogram, numeral, etc.), and the number of days in that activity. Extra-curricular activity information must include activity involved (including CS for Corps Squad or IM for intramural), the title of each club in which a cadet is authorized to participate, the status of a specific activity to indicate whether or not it is actively participating in the current season, a code that uniquely identifies the type of activity, the title, rank, and name of the individual in charge of the activity, an activity excusal code to indicate excusal from parades, etc., the number of cadets authorized as players for A Squad, B Squad, and J-V Squad during in-season activity, the number of players authorized for off-season, and the title or rank and name of the coach of an intercollegiate sport. Extra-curricular trip information is updated weekly, and includes a unique code to identify an extra-curricular trip section record, the name of the location to which a trip is going, the city, state, and zip-code of where a trip is going, the phone number where an individual can be reached while on a trip, the title or rank and name of the officer or civilian in charge of the trip, the name of the cadet in charge of the trip, the year, month, day, and time of departure and return of the trip, the uniform to be worn by a cadet at the trip formation, the assembly point for departure, the type of transportation for the trip, the amount of academic half-days and evening study periods used while attending the trip, and indicators of whether or not the trip is chargeable and posted.

C. THE DEAN'S OFFICE DATABASE REQUIREMENTS

The Dean's office is responsible for the scheduling of cadets into approved courses and the maintenance of past and present grades for all current cadets. In order to accomplish its mission, the Dean's office requires that information be kept on courses, classrooms, books, schedules, and grades.

In the area of course selection, cadets are required to forecast their entire schedule (8 terms) sometime prior to the end of their sophomore (yearling) year. This forecast consists of the following information: the cadets field of (minimum of one; optional second area) each consisting of an area, field, and subfield identifier code, and the cadets field of study advisor, to include the advisors rank, full name, department, and telephone number. Additional information includes the total credit hours for which the cadet is enrolled -- these credit hours must be checked against graduation requirements for the cadets class, the field of study requirements, and course prerequisites, prior to the advisor's approval. The remainder of the course information consists of the courses for which the cadet is enrolled, including course number, hour in which the course will be taken, hour in which the final exam will be given, and an indicator of whether or not the course is an overload course, if any prerequisites were waived for this course, if the course is being repeated by the cadet, and whether or not the department has approved this cadet for taking the course. These courses must also be checked against the course requirement for graduation and for each term, which may vary from class year to class year. If a cadet validates a course, the course number, course description, and year/term offered must be recorded, as well as the reason for the validation.

To support the course enrollment process, the following information is kept on each course offered: the course name and number (consisting of a prefix, number, and optional suffix), the year and term in which the course is offered, the number of credit hours awarded for course completion, the hour the course is offered, and an indicator of whether or not it includes a lab period. Other course information includes whether the course is a core, advanced core, or elective course, the hour the final exam will be given, and the status of whether or not the department has approved the course, the year and term the course was first taught at USMA, the number of students enrolled in the course, and any course prerequisites, including whether the prerequisite can be taken in the same term, in the previous term, or if taking the prerequisite disqualifies the cadet from taking the course.

These courses have required texts, for which the following information must be kept: a unique number and issue code assigned to each book, the title, author, and unit price of the book, the transaction date and code, the extended price and unit of issue, and the quantity of books actually available for issue. Also, the estimated delivery date of additional books, the procurement instructor number and activity, the quantity requested, and the location of the books are all necessary items of information.

Information must also be kept on the various classrooms available to support the scheduling process. This information includes the classroom number (consisting of both building and room number), the building name, the classroom capacity, the classroom type (chem lab, lecture hall, etc...), the hour taught, and the course number and department, and any remarks needed, for each class taught in the classroom.

Prior to the beginning of each term, the cadet selections for that term are collected, and the optimal time to offer courses is determined. Constraints on this operation consist of student enrollment (first and second regiments take courses together, as well as third and fourth), classroom availability, and departmental desires (only the first two of these constraints are stored in the data base). Once the courses to be offered are determined, this information is used by the dean's office to split the enrolled cadets into the various hours the courses will be offered. This is accomplished through a random distribution of the enrolled cadets. A printed schedule for each cadet is then distributed throughout the corps of cadets.

Each cadet has the opportunity to modify his schedule in two ways. First, he is allowed to change the hour in which he attends a certain course. This action is under the constraints that the gaining hour must have sufficient room for the cadet, and that the cadet's removal from the losing hour will not reduce the class size below the minimum required to offer the class. This modification is done on a first-come, first-served basis. A second modification allowed is when a cadet drops a course and/or adds a new course to his schedule. This action is under the same constraints as the hour change modification, which when taken together with the cadet's long term schedule must still reflect the correct classes for a successful graduation.

The grades for each cadet are maintained by his instructor for the entire term. At certain pre-designated points of each term the instructors input the cadet's current grade into the database. If some special circumstance exists (injury, emergency), which does not allow a cadet to complete the course on schedule, a special flag or comment is inserted into the cadet's grade record. The following grade information must be maintained on a term, year, and cumulative basis for each cadet: academic and general order of merit, quality points, percentile, credit hours, and QPA. Additionally, a distinguished cadet indicator must be maintained with the yearly information, and a final term and QPA probation indicator must be kept with the cumulative information. Also, at the term level, a QPA probation indicator, active or inactive indicator, and graybook indicator and recommendation are necessary.

During the course of a term a cadet may be reassigned to different sections within a particular course and hour, based upon his current standing in that particular course. In most cases the only impact is the updating of the cadet's current section number. Physical education reassignment, however, is unique. Each reassignment represents a different course (gymnastics, wrestling, etc...) and must be recorded as such in the data base. This is done as if each reassignment were the start of a new course.

IV. RELATIONAL DATABASE DESIGN FOR THE WEST POINT DATABASE APPLICATION

The EER diagram for West Point's new database design, illustrated in Figure 4.1, is described in detail in this chapter. Included in this description are the reasons for the use of subclasses, new entities that have been included, and why certain entities are linked together. Also included are the frequency of use of entities and why certain attributes are not included as part of the CADET entity, but are represented as one-to-one relationships to the CADET entity. Appendix C contains all the functional dependencies, which we derived to assist us in formulating a comprehensive EER diagram.

In general, our relational database design was created to accomplish three major objectives. These objectives are: increasing the accessibility of database information to all users, minimizing redundancy, and allowing for easy implementation of future DBMS improvements. We designed our EER diagram to be as efficient as possible, while keeping with our major design objectives. To increase data accessibility and minimize redundancy, we first tied together the three separate database schemas, insuring that all data duplication was eliminated. Due to the nature of West Point's naming conventions, i.e. the same data stored under two or more different names, this became a very tedious undertaking. This manual review of the thousands of data fields in the three data dictionaries was extremely time-consuming.

As part of the elimination of duplicate data, superclasses and subclasses were formed with the subclasses inheriting all of the attributes of their respective

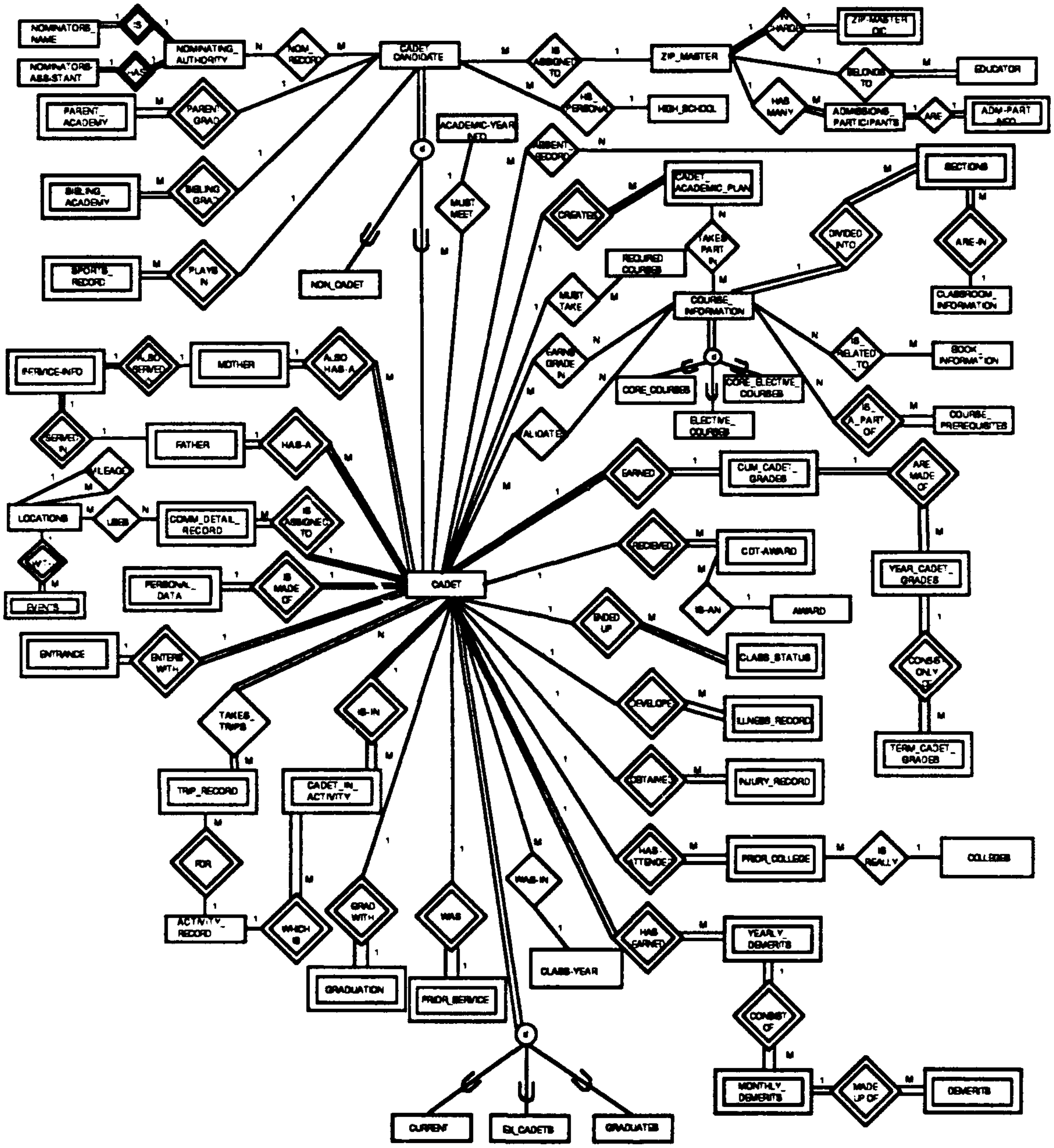


Figure 4.1 Relational West Point EER Diagram

superclasses. After minimizing redundancy, we grouped the data fields together into logical areas: cadet specific information into CADET, entrance data into ENTRANCE, etc. We then looked at increasing the efficiency of the logical groups. This increased efficiency was accomplished by separating out the data which was not used very frequently, but had a requirement to be maintained. While designing the new schema, we also had to ensure that all of the information which was available in the old design was still available in the new design, as well as incorporating new information for use with future applications. Appendix D includes all the tables, keys, and attributes pertaining to the entities and relationships of Figure 1. Located at the end of this appendix are the calculated fields for the relational design. In developing our new design, we extracted those infrequently used fields that could be determined, relatively easily, from other fields. These fields can be calculated using Oracle queries. Fields such as TERM-ACAD-QPA which are accessed frequently were left as attributes within the relational tables, in order to save the processing time of having to perform repeated queries to calculate them. The tables in Appendix D were developed from the functional dependencies in Appendix C, and are in third normal form.

But, before we could formulate our own relational database design for West Point, it was first necessary to gain a thorough understanding of the functionality of the current network model and any additional functionality requirements. Without this thorough understanding, our new design could not be comprehensive. The first section of this chapter describes the process we used to extract the needed information.

A. EXTRACTING INFORMATION FROM THE CURRENT DATABASE DESIGN

The task of understanding and extracting information from the current database design was both time-consuming and rigorous. It took the two of us working in conjunction with Mark Hendrickson, who was doing research for a related thesis, a total of three months to gain a thorough understanding of the current and projected future applications of the West Point database. Our understanding of these applications has been presented in Chapter III.

In researching the current West Point database, a myriad of documents and schemas were used. Compounding the complexity of the current system is the fact that it is portrayed as four separate applications, one each for Candidate, Field Force, Scheduling, and the Cadet Information Database (CIDB). The existing schemas for these four applications are located at Appendix B. The Candidate application includes information on those individuals applying for admission to West Point. The Field Force application includes those personnel involved in the recruitment of cadet candidates. Information about courses offered and when a cadet is scheduled to take a particular course is included in the Scheduling application. And, the CIDB includes all personal, military, and disciplinary information about a cadet. Each of the four applications has an on-line data dictionary and a database schema. The schemas were used to determine the relationships between the various pieces of information that are required to be maintained, while the on-line data dictionaries were used to determine the exact composition of the major categories of information, to include attribute names and field iength. The field lengths from the existing database were used to develop our intermediate file formats found at Appendix E. The on-line data dictionary for the CIDB alone consists of approximately 700 attributes covering 257 pages.

The Scheduling on-line data dictionary, while not as long as the CIDB on-line data dictionary, was very difficult to understand in that the comments describing the fields are very cryptic or non-existent. To illustrate this point, an excerpt of the Scheduling on-line data dictionary has been placed at Appendix A. For example, the SCHED-BOOK-RECORD found on page 1 contains no comments. Some of the fields, such as SCHED-INST-PROCURE-INST-NO and SCHED-BOOK-PROCURE-ACT, are not self-explanatory. Another example can be seen on page 8. With no comments available, it is difficult to determine what the SCHED-CADET-GROUP-FLAG field indicates.

Additional time was required to identify where all the duplicate data is located. This time was increased due to the same data being named two or more different names, in some instances, and being located in two or more different data dictionaries. Except for keys or partial keys, we eliminated duplicate data when we combined the four separate schemas and applications into one combined schema and application. An example of this duplicate data can be found in the excerpts of the CIDB and Candidate (Admissions) on-line data dictionaries located at Appendix A. Specifically, TEST-WHOLE-CANDIDATE-SCORE found on page 207 of the CIDB contains the same information as WHOLE-CANDIDATE-SCORE found on page 38 of Candidate. Similarly, TEST-PAE also located on page 207 of the CIDB contains the same information as PHYSICAL-APTITUDE-EXAM-SCORE located on page 39 of Candidate. Compounding the cross-referencing problem, is the fact that many of the comments in the CIDB were incorrect and misleading. Examining the TEST-

PAE attribute of the CIDB again, reveals that the comment refers to Candidate Database element "AGF", when PHYSICAL-APTITUDE-EXAM-SCORE is actually element "AGG".

Another example of duplicate data is located in the CADET-RECORD of the CIDB. On page 125 the attribute CADET-CURRENT-PULL-UPS has the description: "The current pull ups a cadet has performed." While on page 126 of the same record is the attribute CADET-CURRENT-PULL-UPS-TAKEN, which has the description "The current pull ups taken by a cadet." Both have the same collection method: "Collected upon entrance of the cadet and reposted. It is updated monthly by DPE for 4th class and twice a year for upper class cadets." These fields represent the same information, so the second one was eliminated. On pages 130-133, of the CIDB, another example of duplication of data within the same record can be cited. CADET-PERMANENT-COMPANY and CADET-TEMPORARY-COMPANY, contain the same information as CADET-1ST-COMPANY and CADET-2ND-COMPANY, respectively. All instances of duplicate fields had to then be verified with the DBA's office at West Point, before they could be eliminated.

Conflicting range values for the same information, in two different on-line data dictionaries, further complicated the process of understanding the existing database design. Again the CIDB and Candidate dictionaries can be used to illustrate this problem. The TEST-LEADERSHIP-POTENTIAL attribute on pages 206 and 207 of the CIDB has a range of 147-780, while the LEADERSHIP-POTENTIAL-SCORE, representing the same information and found on page 39 of the Candidate database, has a range of 200-800. Another example of confusing range values is located on page 51 of the Candidate dictionary, the HIGH-SCHOOL-CLASS-RANK-SCORE attribute, compared with the CADET-HS-RANK-CONVERT-NUMBER found on pages 202 and 203 of the CIDB. In the Candidate dictionary the referenced attribute is defined as having a range of 20-800 that is moved to a three position field of 200-800. In the CIDB, however, the attribute has a range of 20-80. Before the duplicate information can be eliminated, these conflicts in range values must be eliminated and the correct values determined. These examples are merely a representative sample of the deterrents we encountered when gaining a better understanding of the existing database system, as there are numerous others.

USMA Regulation 25-5, Information Management Systems, contains a brief description of the responsibilities of the various organizations and sub-organizations that are the primary users of the database. This brief description was expanded in Chapter III, to give a better, more well-defined description of each major user's requirements for the database. The more detailed description was necessary for us to make a more accurate relational database design. To obtain this more detailed description, we read background information on West Point and had numerous contacts with the Database Administrator (DBA) and users of the system, including a couple of two day brainstorming seminars. This regulation also lists the proponent for every database field, as well as the initial collector and the organization that is responsible for updates. In some cases, but not all, the same agency is responsible for all three actions. This regulation was used as a cross-reference with the on-line data dictionaries. When inconsistencies arose, care had to be taken to use the most current document available. The regulation, for example, is dated August 1989, and is updated annually. The on-line data dictionaries are updated more frequently. Specifically, we received updated CIDB data dictionaries in December 1989 and February 1990 containing fields that are not currently listed in the regulation, and not containing some other fields that are listed.

Additionally, differences in network and relational database models had to be considered. Research was conducted into how a network database works, including the use of record pointers and how this is reflected on an EER diagram. Some entities, such as pointer records which act as links between various groups of records, were eliminated. These pointer records are not needed in the relational design, because the entities' keys act as the links .

B. EER DIAGRAM SUBCLASSES

CADET_CANDIDATE is the superclass of NON_CADET and CADET, which inherit all of CADET_CANDIDATE's attributes. NON_CADET includes all those people that are not accepted into USMA, either because they were not yet eligible, not qualified, or qualified but rejected for admission. CADET includes those individuals who were accepted and actually entered into the academy. All of the relationships stemming from CADET_CANDIDATE connect to entities that contain information relevant to a candidate's application for admission to USMA.

If an individual becomes a cadet, additional personal information, as well as cadet specific information, is stored on him. Through attrition, approximately one-third of those admitted will not graduate after four years. Means of attrition include separation for failing to meet minimum academic, physical, disciplinary, and honor standards, and resignation. To increase efficiency, CADET has been further divided into the following frequently used categories: CURRENT, EX_CADETS, and GRADUATES. This categorizing of CADET increases the efficiency of the database because the search space for each commonly accessed group will be greatly reduced, saving valuable computer access time. CURRENT includes all those individuals who are presently cadets at USMA. EX_CADETS consists of all those people who were once cadets, but are not now cadets and who did not graduate from West Point. Reasons for an individual being an EX_CADET include resignation and separation. GRADUATES include all those people who successfully completed a course of study at USMA, and were awarded diplomas. Another benefit of separating these three groups is that at some point graduate and/or ex-cadet records may need to be eliminated or stored elsewhere from cadet records, and this grouping of records will make that task easier since the records are already uniquely identified.

COURSE_INFORMATION is divided into three categories: CORE_COURSES, CORE_ELECTIVE_COURSES, and ELECTIVE_COURSES. The reasoning for this separation is analogous to the reasoning for the separation of the CADET entity. CORE_COURSES are all the courses that are required for all cadets to take. CORE_ELECTIVE_COURSES consist of all those courses from which all cadets must choose some electives. And, ELECTIVE_COURSES are additional optional courses from which cadets may choose. Again, this partitioning of an entity will decrease the search base, thus reducing the query time required to access needed information. Reducing computer access time is always highly desirable, since it is still a very costly commodity.

C. ONE-TO-ONE RELATIONSHIPS AND FREQUENCY OF USE

GRADUATION, PRIOR_SERVICE, PERSONAL_DATA, ENTRANCE, and CUM_CADET_GRADES are all entities with one-to-one relationships to CADET. Although this information could have been incorporated into the CADET entity, a design decision was made not to combine this data. GRADUATION, PRIOR_SERVICE, PERSONAL_DATA, and ENTRANCE information is all accessed infrequently, while CUM_CADET_GRADES is separated because it relates directly to YEAR_CADET_GRADES and TERM_CADET_GRADES. Had all of these entities been included in the CADET entity, its size would have been greatly increased. Since CADET is the most frequently accessed entity, a smaller size is desired to decrease the time it takes to process commonly used queries.

In addition to being used *infrequently*, GRADUATION information is not created until within six months of graduation, so it would be a waste of disk/memory space to have this information residing, for three and a half years, as blank fields in the CADET entity. Likewise, PRIOR_SERVICE information is only needed for those cadets who have prior service. These cadets comprise only a small minority of all cadets, so it would be very wasteful to have this information in the CADET entity, since it would consist only of blank fields for most cadets. In addition to needlessly occupying disk/memory space, null fields can also lead to confusion and misrepresentations. For example, if PRIOR_SERVICE information is put into the CADET entity, but left blank, it is not readily apparent whether or not the cadet has had prior service. The fields may have been erroneously left blank. There also exists the possibility that garbage may eventually populate these fields, or someone may accidently populate these fields with data belonging to another cadet. It should also be noted that key values can not be left null. So, fictitious data may need to be entered into these fields, just to act as place keepers. Blank fields are therefore very undesirable in a database.

PERSONAL_DATA is separated because it represents personal data about a cadet (i.e. blood type and ethnic group), instead of cadet specific information that is stored in the CADET record. This information is relatively stable in that it changes very infrequently and is rarely queried. ENTRANCE information is also separate from CADET, because, like PRIOR_SERVICE, this information is rarely accessed. It represents test results and other pertinent information about a cadet at the time he enters the academy. If ENTRANCE and PERSONAL_DATA were added to CADET, the read/write head of the access arm of the storage disk would require additional time to traverse infrequently used data, when retrieving information for daily queries and activities. CUM_CADET_GRADES is not a part of CADET because it is constantly changing and being updated every time YEAR_CADET_GRADES and TERM_CADET_GRADES are updated.

D. RELATIONSHIPS

Many entities and relationships were determined based on logical groupings, rather than frequency of use. One such logical grouping is disciplinary actions, or demerits. Demerit information must be kept on a daily, monthly, and yearly basis. All three categories of demerit information must be updated at the same time, so these entities were linked together with relationships. The link from

CADET to HAS_EARNED is total participation (represented by a double line) because every cadet will have a YEARLY_DEMERITS record for each year he is at USMA, no matter whether he actually receives any demerits or not. YEARLY_DEMERITS, MONTHLY_DEMERITS, and DEMERITS are all weak entities (denoted by a double box) because YEARLY_DEMERITS data can not exist on a person without that person first being a cadet. Similarly, MONTHLY_DEMERITS data can not exist without a YEARLY_DEMERITS record and DEMERITS data can not exist without a MONTHLY_DEMERITS data. Therefore, the key for each subsequent weak entity includes the key for each preceding entity. For example, the key for DEMERITS is SSN, DEMERIT_YEAR, DEMERIT_MONTH, DEMERIT_DAY, and CADET_OFFENSE_NUMBER, which includes the keys for all preceding entities (MONTHLY_DEMERITS key is SSN, DEMERIT_YEAR, and DEMERIT_MONTH, while YEARLY_DEMERITS key consists of SSN and DEMERIT_YEAR, and CADET's key is SSN). The pattern of keys is readily apparent and one can see how the previous entity's key is needed to uniquely identify tuples belonging to subsequent weak entities. Like the demerit entities, CUM_CADET_GRADES, YEAR_CADET_GRADES, and TERM_CADET_GRADES are connected to one another, with relationships, in order to facilitate updating and retrieving information. The reasons for total participation and weak entities also parallel those reasons for total participation and weak entities in the demerit entities.

We separated some entities that are combined in the network design. These separated entities include: ILLNESS_RECORD and INJURY_RECORD which currently exist as ILLNESS-INJURY-RECORD, and PRIOR_SERVICE, PRIOR_COLLEGE, and COLLEGES which currently exist as PRIOR-SERVICE-COLLEGE-RECORD. The ILLNESS-INJURY-RECORD was divided into two separate entities because they have no bearing on each other and we have attempted to group together only those pieces of data which are directly related to each other. The PRIOR-SERVICE-COLLEGE-RECORD was not only separated for the same reason, but for other reasons as well. One of these reasons was to allow for multiple PRIOR_COLLEGE records which the current existing design does not permit. This new design will allow for as many PRIOR_COLLEGE records as the number of colleges the cadet has previously attended, whereas the current design allows for only the most recent previous college to be recorded. Thus, the new design will provide more accuracy. Also in the current existing design, if a cadet had previously attended college but had no prior service, the prior service fields would use memory/storage space as blank fields. In the proposed design, on the other hand, memory/storage space will be minimized because no prior service record will be created for that cadet. The same reasoning applies for a cadet who has prior service but not previously attended college. Further, COLLEGES was broken out as a quick reference for looking up the college names to determine the addresses of the colleges attended. Since college addresses are infrequently accessed, they were separated into their own table.

E. NEW APPLICATIONS

In designing the EER diagram for the relational database schema, we incorporated some new features that are not present in the current existing design. Some of these new capabilities can be found as attributes in the relational tables located at Appendix D, while others are represented by the subdivision of entities previously discussed in this chapter. One of these new applications, however, required the addition of three new entities in order to give the Commandant's Office the ability to cut summer assignments using the database. Currently, this feature is being accomplished using another system. The MILEAGE relationship, and the LOCATIONS and EVENTS entities were added to accomplish this task.

MILEAGE is a one-to-many relationship between locations, which includes the distances from each summer assignment location to every other summer assignment location. This relationship represents static data which does not change, and was added to allow for the ease of reporting and cutting orders on summer assignments with a minimum of manual look-ups. This MILEAGE information is needed to determine the amount of travel money and travel time a cadet receives based on the distance traveled. The EVENTS entity contains information about each event's start date, end date, and location. This information is required because each event may start at multiple locations at different times. And, LOCATIONS is another look-up table indicating the corresponding location name for each location code and whether or not it is an overseas assignment (OCONUS). This combination of event names, location names, start and end dates, miles between locations, and overseas indicator, related to the COMM_DETAIL_RECORD and CADET provides all the necessary information for the Commandant's Office to produce summer assignment orders on all cadets.

V. INTERMEDIATE FILE FORMAT REQUIREMENTS AND DEVELOPMENT OF THE PROTOTYPE SYSTEM

As discussed in Chapter II, in the background information, database translations involve the intricate task of porting data from the source to the target system while preserving data quality. To accomplish this task, the data must be converted into one or more intermediate file formats. These intermediate file formats reflect the attributes, and the characteristics of the attributes, that will be used to populate the new tables or records.

In this chapter, we discuss the need for intermediate files in database translations, and why some translations require two iterations of intermediate files as compared to one. We then discuss the intermediate file formats that were developed to effect the translation of data from West Point's existing database system to their target system, using Oracle. The way the data is represented and related, in a relational versus network model, is the central issue. Examples of the intermediate file formats are located at Appendix E. These formats are felt to contain a good representative sample of data contained in the existing database, and are the formats containing the data used to load the relational tables for the prototype. And finally, we discuss the actual Oracle loader programs, found at Appendix F, that are used to populate the relational tables of the prototype developed for this thesis.

This chapter also presents the development path for the prototype and a test run script for the prototype. The Oracle prototype was designed with the average system user in mind. The typical system user is familiar with the information contained in that portion of the database he is associated with, and is familiar with the typical queries performed on that information. The user, however, has limited knowledge of relational databases, and in particular, Oracle. Therefore, the menus and forms have been carefully designed and sequenced to allow a novice user to quickly and easily learn, and effectively use, the system. Included in the development path for the prototype are the design decisions that we made, and why we made them. The test run script illustrates how prepared and free-form queries, as well as prepared insertions, can be performed on this system.

A. INTERMEDIATE FILES FOR DATABASE TRANSLATIONS

The existing design is not merely converted into a new design but rather the system is redesigned from scratch. Attributes that belong to only one record in the existing design may belong to several records or even be non-existent in the new design. Conversely, attributes belonging to different records may be combined into one record in the new design. In many cases the existing design does not have the required functionality, so additional attributes are added. Additionally, the source and target computers and database management systems may be entirely different. All of these factors create the need for an intermediate file, or files, in order to translate the data between systems.

There are, in general, two techniques for the transference of data between databases through intermediate files: single intermediate file and double intermediate file formats. The single intermediate file technique, as portrayed in Figure 5.1, is used when the source database is capable of placing the data in a format which is directly readable by the target database system and/or its utilities. This is the simplest form of data transfer which requires the use of intermediate files.

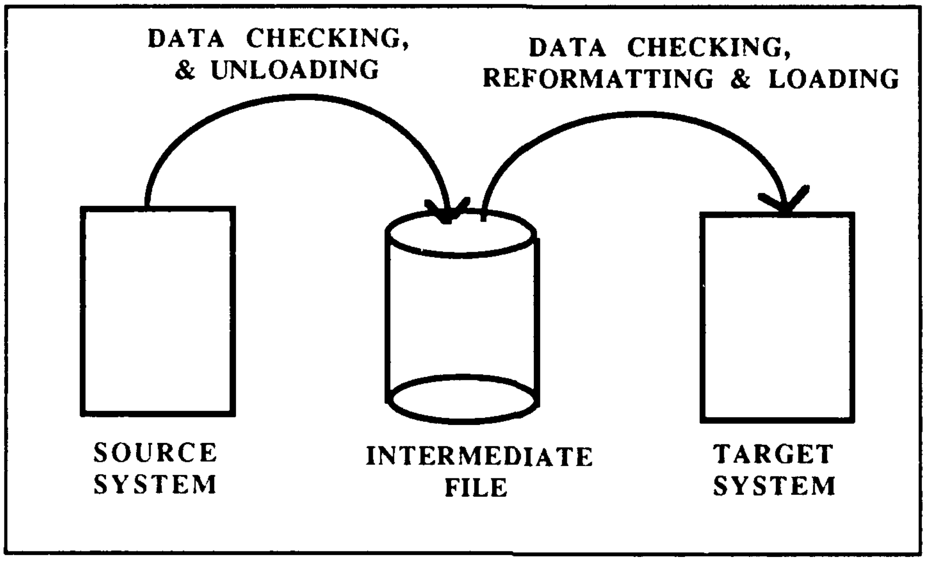


Figure 5.1 Single Intermediate File Format

The double intermediate file technique, shown in Figure 5.2, is required when the source database can not place the data into a format which is readable by the target database system or its utilities. The source database must then place the data into a format which, after being operated on by some program/utility, will now be in a format which is readable by the target database and/or its utilities. Although this is the more complicated transfer technique of the two being discussed, it assures a path from any source database to any target database. What varies is the complexity of the conversion program.

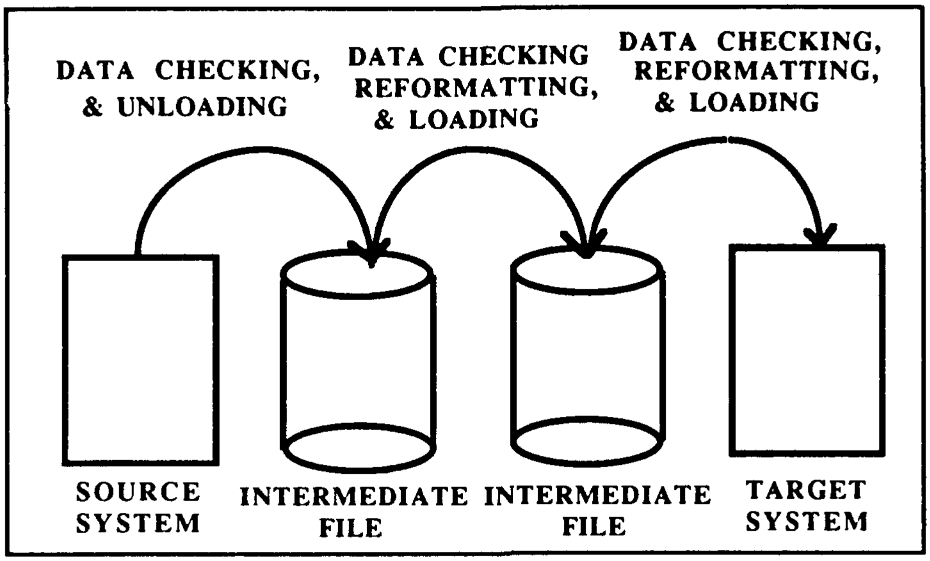

DATA CHECKING, & UNLOADING
DATA CHECKING REFORMATTING, & LOADING
DATA CHECKING, REFORMATTING, & LOADING
SOURCE SYSTEM
INTERMEDIATE FILE
INTERMEDIATE FILE
TARGET SYSTEM

Figure 5.2 Double Intermediate File Format

Here again our work is closely related to that of Mark Hendrickson's [Ref. 3]. His work would be used to check and clean the data in the current system as it is being put into the intermediate file format, and again when loading the data from the intermediate file format into the target system. This checking and cleaning of data is designed to detect and correct most existing data errors, so we can assume that the data we have in the intermediate files is correct. It does not, however, check for correct data formatting (such as real vs. integer numbers), an issue that will be addressed in the next section of this chapter. Note that because of the different thesis domains, an artificial separation has been made between correcting data format and detecting and correcting data errors. During the actual conversion process, these two functions are performed together.

B. INTERMEDIATE FILE FORMAT REQUIREMENTS FOR THE WEST POINT SYSTEM

The West Point database conversion is a network to relational conversion on the same computer. In general, this conversion can use the single intermediate file technique for a majority of the data transfer. The CODASYL based data manipulation language used by the source database is able to place the data into character format, which is easily readable by the Oracle utility program SQL*Loader. This allows the transference of all tuples of each relational table to be transferred using one SQL*Loader program per relational table.

An interesting problem occurs when the data consists of real numbers, i.e. those numbers with numbers to the right of the decimal point. The CODASYL data manipulation language of the source database can not place the decimal point into the intermediate file, just the number characters. For example, 2.714 in the source database would become 2714 in the intermediate file. The SQL*Loader utility can not handle this conversion directly; however, there are two methods which are viable solutions.

The first solution consists of creating a temporary table which duplicates the final destination table except that any decimal numbers are formatted such that the number of digits in the number appear to the left of the decimal point. Thus a field of format number (5,3), or x.xxx, becomes format number (8,3), or xxxx.xxx. The data is then loaded into the temporary table, and all decimal fields are then updated to the proper decimal places. In this instance the number 2714 in the temporary table would be multiplied by 0.001 to give the proper value 2.714 in the field. Then all the tuples would be transferred to the final destination table and the temporary table would be deleted. A DOS batch file was used in the prototype to automate the above procedure for the three tables within the prototype which required decimal numbers: EARNS_GRADE_IN, CUM_CADET_GRADES, and TERM_CADET_GRADES.

For a large quantity of data, there is a variation on the above technique. All non-decimal data is transferred over directly through the intermediate file into the final table, and only the decimal data is manipulated as described above. This would significantly reduce the processing time and the double handling of data which was initially correct.

The second solution to this problem is using the double intermediate file technique. After the source database created the intermediate file, a program would be written to insert the decimal point at the appropriate places in each record. Then this new intermediate file could be read directly by SQL*Loader. Although this technique is much simpler than the first solution, it introduces a greater possibility of data contamination. However, we feel that this second solution would be the preferred method for large databases such as the West Point database.

Appendix F contains the Oracle loader programs needed to load the relational tables used for our prototype.

C. DEVELOPMENT PATH FOR THE PROTOTYPE

The first step in developing the prototype was the development of a flow diagram to represent the available options and flow of control for each user. In creating the screens to represent the flow of control, a logical division was made between retrievals and insertions. This separation was made in order to allow all users the ability to retrieve any and all needed information from the database, a feature not currently offered. But at the same time, a user must be restricted to perform insertions/updates on a limited set of the database attributes, as directed by USMA Regulation 25-5. To impose this restriction, two major classes of users were designed into the prototype. The first class of user is the general user; this user requires only the ability to retrieve information from the database. In the prototype this user has an application name of "GENUSE", and a username/password combination of "GENUSE/GENUSE". The second class of user needs the ability not only to retrieve information, but also to insert/update information in the database. This user, generally, is a member of one of the following offices: the Dean's office, the Admission's office, or the Commandant's office. For the prototype, the application name, that has been implemented, for this class of user is "DEAN" and the username/password combination is "DEAN/DEAN". Note that the application name and username/password for both the Admission's and Commandant's office class of users have not yet been implemented.

Retrievals consist of prepared and free-form queries. Prepared retrievals are those retrieval queries that are usually preformed on multiple tables and are done fairly frequently. The following query, for example, is performed several times a semester, by Dean's office personnel: List course number, course percentage date, course section, course hour, course letter grade, cadet name, and SSN for all courses in a particular academic term for which an instructor has not submitted a grade since a particular date. This query produces a report of delinquent grades. Free Form queries are single table entry forms which allow the user to obtain any information contained within any one relational table. These queries are usually one-time queries or are infrequently done. An example of this type of query is as follows: List the academic/year term information on a particular cadet. Because the assumption of this prototype design is that the user does not understand sequel (the relational query language used by Oracle), we felt that multi-table requests would be beyond the understanding of the normal user of this segment of the system. Users who understand SQL and desire to create their own queries may obtain further permission and capabilities from the Data Base Administrator.

Insertions are strictly controlled to particular combinations which the user has pre-defined and has had approval from the Data Base Administrator, who in turn places an appropriate form into the user's password protected sub-section of the insertion segment of the DBMS. The DBA is the only individual with unrestricted access to all data elements within the database.

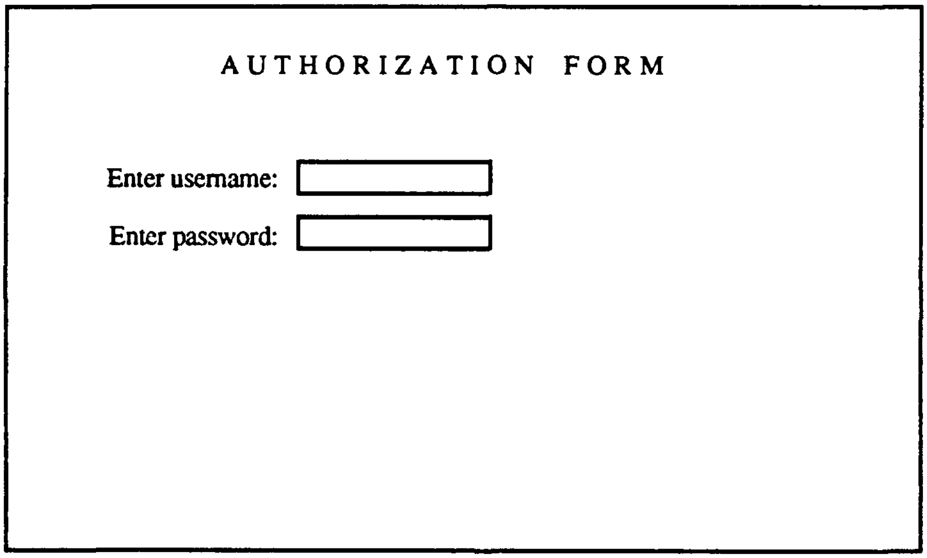
There are three levels of users defined within the prototype system. The first level is the Data Base Administrator. At this level the user has complete control of the Oracle environment. He can manipulate any data within the database, as well as change the operating characteristics of the DBMS itself. Also, the DBA can add or delete users and change the user level of individual users. The second level is the General User. This user has total access to the retrieval subsystem of the DBMS, but has no access to the insertion subsystem. Typically this user would be a staff or faculty member who desires information about some particular area of the database. The third, and final level, is the Dean, Admissions, and USCC User. These users have all the capability that the general user has, but are also authorized the use of some subsection to the insertion subsystem. Each of these users will have an individual application which authorizes them to perform insertion/update operations to selected data items, as described in USMA Regulation 25-5.

Before the prototype system could be developed, we had to translate the queries West Point sent to us, from a CODASYL-based query language to the equivalent English version. Then, we translated the queries we were going to implement to the sequel query language. A representative sample of common queries performed on the West Point database are found at Appendix G. A cross-section of these queries were chosen to be fully implemented using the prototype system. Figure 5.3 represents the sequel query we implemented for performing a prepared query. The variables beginning with "&" in this query represent the parameters which are passed to SQL*Plus when executing this retrieval. The remainder of this chapter steps through how the sequel query, portrayed in Figure 5.3, is executed on the prototype system.

```
select course_prefix, course_number, course_suffix, cadet.ssn, grade_per_day,
  grade_per_month, cadet_short_namc_first_half, letter_grade, year, term,
  grade_per_year, hour, section
from earns_grade_in, cadet
where year = &5 and term = &6 and cadet.ssn = earns_grade_in.ssn
intersect
(select course_prefix, course_number, course_suffix, cadet.ssn, grade_per_day,
  grade_per_month, cadet_short_name_first_half, letter_grade, year, term,
  grade_per_year, hour, section
from earns_grade_in, cadet
where course_percentile between 0 and &4
  and cadet.ssn = earns_grade_in.ssn
intersect
(select course_prefix, course_number, course_suffix, cadet.ssn, grade_per_day,
  grade_per_month, cadet_short_name_first_half, letter_grade, year, term,
  grade_per_year, hour, section
from earns_grade_in, cadet
where grade_per_day between 1 and &1 and grade_per_month = &2
  and grade_per_year = &3
  and cadet.ssn = earns_grade_in.ssn
union
(select course_prefix, course_number, course_suffix, cadet.ssn, grade_per_day,
  grade_per_month, cadet_short_name_first_half, letter_grade, year, term,
  grade_per_year, hour, section
from earns_grade_in, cadet
where grade_per_month between 1 and &2 and grade_per_year = &3
  and cadet.ssn = earns_grade_in.ssn
union
(select course_prefix, course_number, course_suffix, cadet.ssn, grade_per_day,
  grade_per_month, cadet_short_name_first_half, letter_grade, year, term,
  grade_per_year, hour, section
from earns_grade_in, cadet
where grade_per_year between 1 and (&3-1)
  and cadet.ssn = earns_grade_in.ssn ) ) ) );
```

Figure 5.3 Sequel query for Cadet and Earns_Grade_In

When the the computer is turned on, the symbol "C:>" appears on the screen and the user must type Oracle to load the Oracle application. Then the user has the option of typing "sqlmenu <application_name>" or "sqlmenu <application_name> username/password" and press the return key, where <application_name> is the application authorized for that user. Note the username/password will actually be the individual's unique username and password. If the user enters "sqlmenu DEAN" then the Authorization form of Figure 5.4 will be displayed, and the user must type his individual username and password in the appropriate boxes. Otherwise, if "sqlmenu DEAN username/password" is entered, the system's main menu, as illustrated by Figure 5.5 will appear. We will now step through an example of a user performing a prepared data retrieval, to perform the query in Figure 5.3 from the database. The figures that represent screens from the prototype are not true to size, but display the same information, in much the same manner, as the actual prototype.



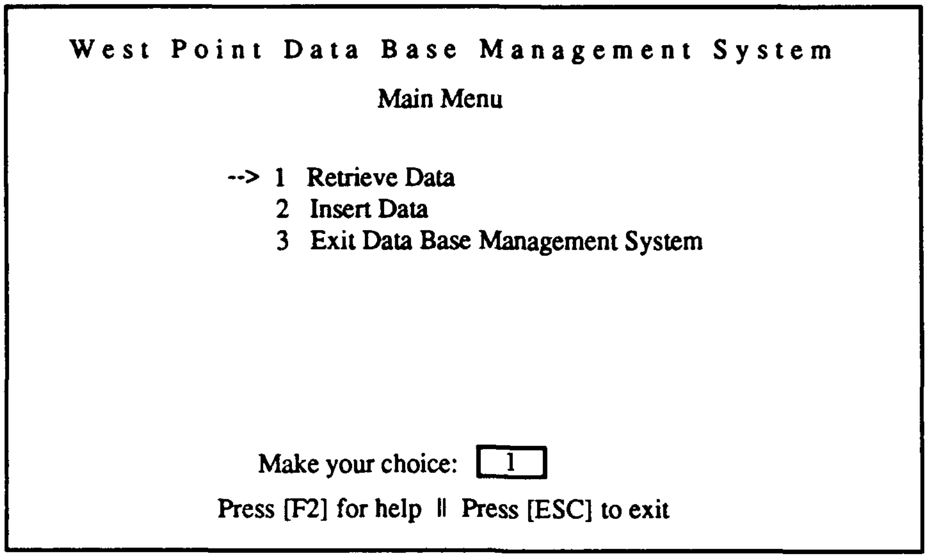
AUTHORIZATION FORM

Enter username: □

Enter password: □

Figure 5.4 Authorization Form for Access to the Prototype

Once the user has entered his username and password, the Main Menu screen, illustrated in Figure 5.5, is displayed. At this point the user has three choices: to retrieve data, to insert data, or to exit the system. For this example the user desires to retrieve data, so a "1", followed by a carriage return, is typed in the box following "Make your choice" at the bottom of the screen. Or the user may choose to use cursor keys to indicate his selection, and then press the carriage return.



West Point Data Base Management System

Main Menu

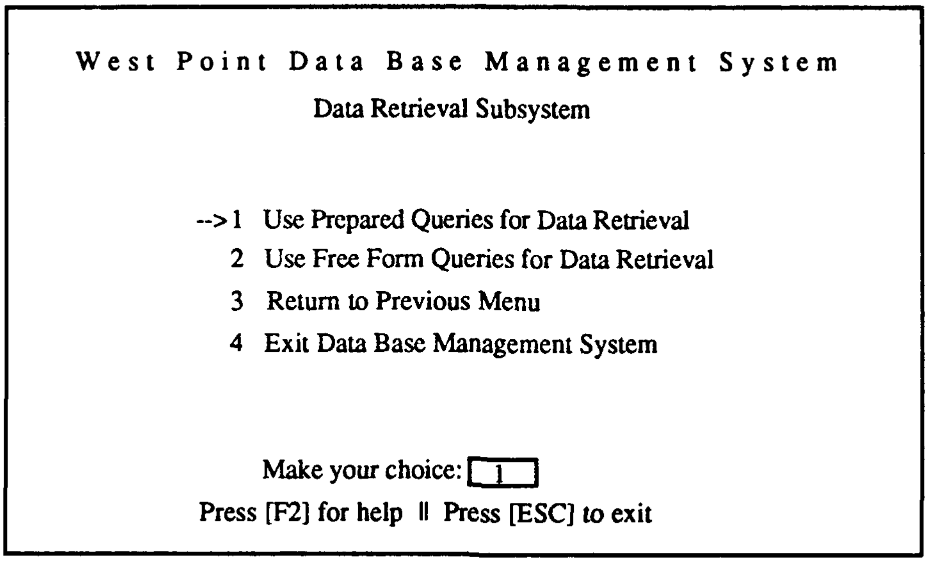
--> 1 Retrieve Data
2 Insert Data
3 Exit Data Base Management System

Make your choice: 1

Press [F2] for help || Press [ESC] to exit

Figure 5.5 Main Menu for West Point Prototype

The system now displays the Data Retrieval Subsystem menu depicted in Figure 5.6. This menu allows the user four options. The first option, using prepared queries for data retrieval, will be used when the desired query is one that is used often and is on the list of queries the DBA has stored in the system. The second option, using free form queries for data retrieval, will be selected when the user has an infrequent query to perform. These free form queries are designed for the user with very limited, if any, knowledge of sequel (the relational database query language used by Oracle). The queries consist of straight-forward, fill in the blank forms. If the user decides that he wants to do an insert, instead of a retrieval, he can choose option 3 and return to the previous menu. Or, if he decides that he does not want to perform any queries at all, he can choose option 4 and exit the system entirely. In this case, the user chooses to use a prepared query for data retrieval and selects option 1 by typing a "1", followed by a carriage return, in the box at the bottom of the screen. Again, the user may choose to use cursor keys to indicate his selection, and then press the carriage return.



West Point Data Base Management System

Data Retrieval Subsystem

-->1 Use Prepared Queries for Data Retrieval

2 Use Free Form Queries for Data Retrieval

3 Return to Previous Menu

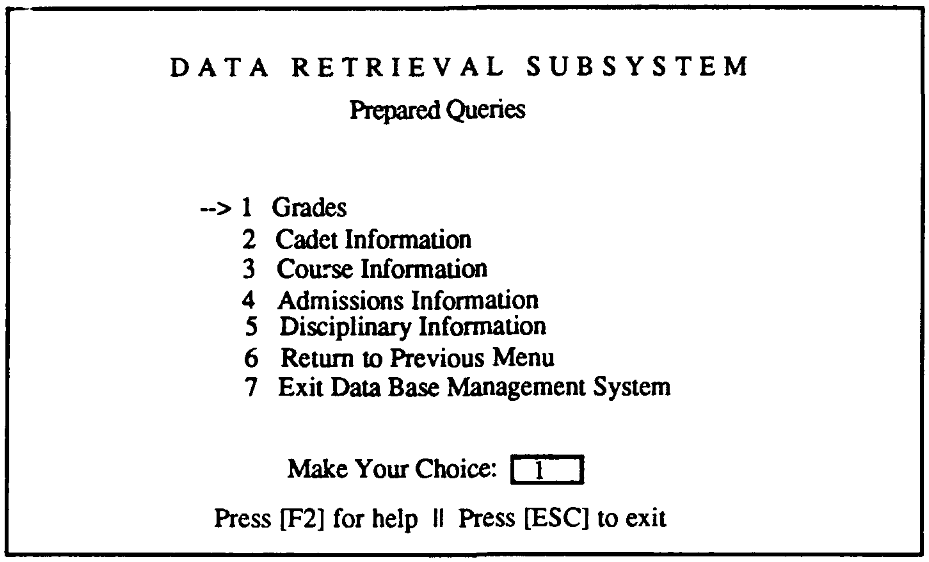
4 Exit Data Base Management System

Make your choice: 1

Press [F2] for help || Press [ESC] to exit

Figure 5.6 Data Retrieval Subsystem Menu

The Prepared Queries menu, shown in Figure 5.7, now appears on the screen. This menu allows the user to select from any one of five different logical groups of prepared queries, to return to the previous menu, or to exit the system. In this example, the user requires grades information and either indicates his choice with the cursor key followed by a carriage return, or selects option 1 by typing a "1" and a carriage return, in the box at the bottom of the screen.



DATA RETRIEVAL SUBSYSTEM

Prepared Queries

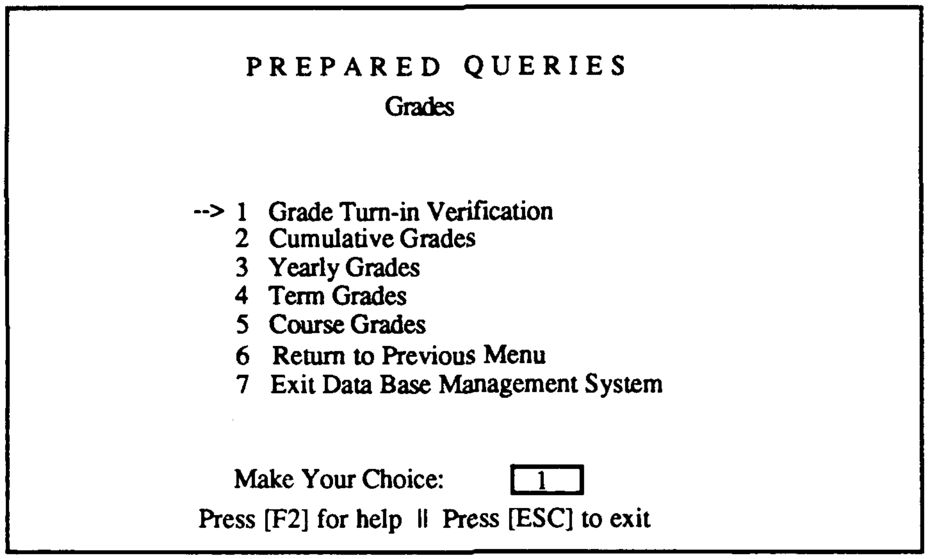
--> 1 Grades
2 Cadet Information
3 Course Information
4 Admissions Information
5 Disciplinary Information
6 Return to Previous Menu
7 Exit Data Base Management System

Make Your Choice: [1]

Press [F2] for help || Press [ESC] to exit

Figure 5.7 Data Retrieval Subsystem Menu for Prepared Queries

The Grades Prepared Queries menu, Figure 5.8, is now displayed. This menu allows the user to select from five different logical groups of prepared grades queries, to return to the previous menu, or to exit the system. At this point, the user can press the [F2] key for help and the English version of the currently selected query will be displayed. In this example, the user desires grades turn-in information, to execute the query in Figure 5.3, and selects option 1 by typing a "1" and a carriage return, in the box at the bottom of the screen. Or the user may choose to use cursor keys followed by a carriage return, to indicate his selection.



PREPARED QUERIES

Grades

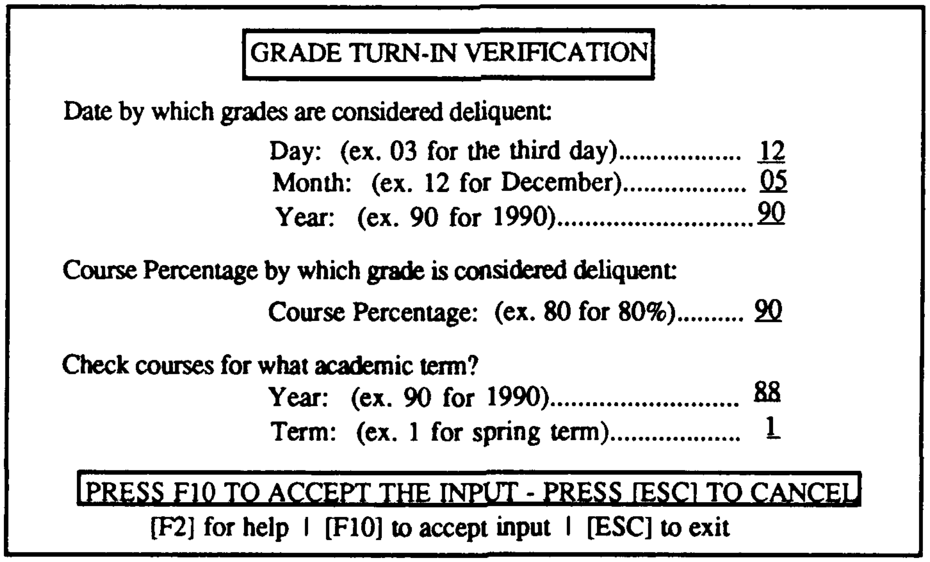
--> 1 Grade Turn-in Verification
2 Cumulative Grades
3 Yearly Grades
4 Term Grades
5 Course Grades
6 Return to Previous Menu
7 Exit Data Base Management System

Make Your Choice: 1

Press [F2] for help || Press [ESC] to exit

Figure 5.8 Prepared Queries for Grades Information

The Grade Turn-in Verification, Figure 5.9, now appears. This form allows the user to input the date, course percentage, and year and term desired to produce the required report of delinquent grades. Each field is self-explanatory as to how the data must be entered.



GRADE TURN-IN VERIFICATION

Date by which grades are considered deliquent:

Day: (ex. 03 for the third day).................. 12
Month: (ex. 12 for December).................. 05
Year: (ex. 90 for 1990)............................ 90

Course Percentage by which grade is considered deliquent:

Course Percentage: (ex. 80 for 80%).......... 90

Check courses for what academic term?

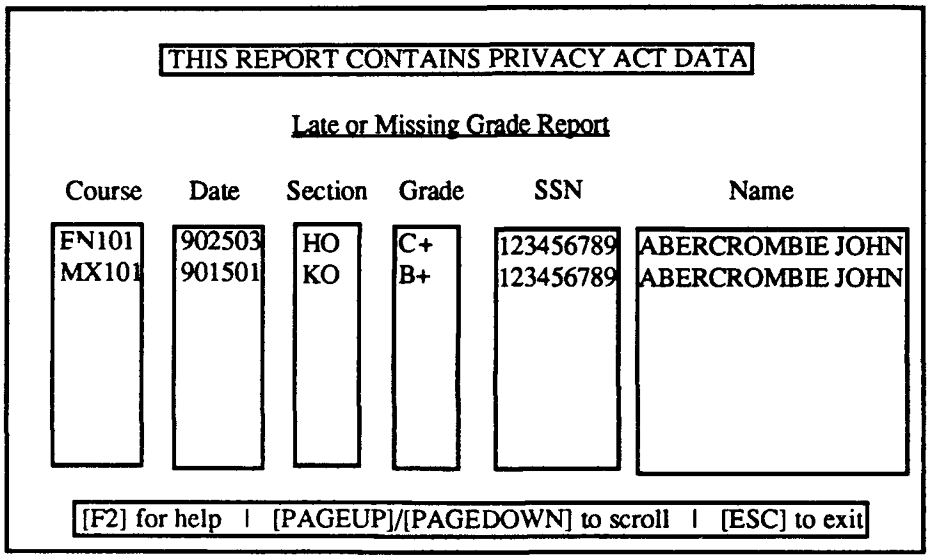
Year: (ex. 90 for 1990)........................... 88
Term: (ex. 1 for spring term)................... 1

PRESS F10 TO ACCEPT THE INPUT - PRESS [ESC] TO CANCEL

[F2] for help | [F10] to accept input | [ESC] to exit

Figure 5.9 Grade Turn-in Verification Information Form

After all the information for the Grade Turn-in Verification report has been entered and F10 has been pressed, the message "-- Press RETURN to return to SQL*Forms --" is displayed. Press the return key, and the report shown in Figure 5.10 is displayed, with a maximum of ten records per screen. The user may then scroll up and down the list of all retrieved records. (The boxes represent field lengths.)



THIS REPORT CONTAINS PRIVACY ACT DATA

Late or Missing Grade Report

Course	Date	Section	Grade	SSN	Name
EN101	902503	HO	C+	123456789	ABERCROMBIE JOHN
MX101	901501	KO	B+	123456789	ABERCROMBIE JOHN

[F2] for help | [PAGEUP]/[PAGEDOWN] to scroll | [ESC] to exit

Figure 5.10 Late or Missing Grade Report

Due to the limitations on the version of Oracle used to develop this prototype (version 5.1B trial), the user must exit Oracle and log back in to execute another prepared query. This limitation does not exist for the free-form or the insertion/update portion of the prototype, and should disappear entirely when implemented on Oracle version 6.0.

If the user, on the other hand, wants to do a free-form query on retrieval of information, he again enters a "1" and carriage return at the Main Menu displayed in Figure 5.5. But, unlike the previous example, he then enters a "2" and carriage return at the Data Retrieval Subsystem Menu, in order to select the "Use Free Form Queries for Data Retrieval" option. This selection causes the Free Form Queries Menu to be displayed on the screen. The series of menus and forms that follow this option differ from those in the previous example of using a prepared query to retrieve data. The remaining sequence of steps takes the user through a series of menus and forms that have actually been implemented on the prototype. At the Free Form Queries Menu, the user would select option "1", to retrieve information about cadets. The Cadet Information Menu then appears, and the user selects option "2" in order to get the "Academic Information" option. The Cadet Academic Information Menu is displayed and the user selects option "4", to receive Term Grades information. At this point, a fill-in-the-blanks form, entitled Academic Term Information appears. The user then enters "90" in the Academic Year field, "01" in the Academic Term field, and ">3" in the Academic Information QPA field. This series of entries will cause the information about all cadets with Quality Point Averages greater than 3.00 to appear on the form, one at a time. The arrow keys may be used to scroll through the retrieved records. The sequence of screens used in this example, as well as those required for the insert/update sequence, can be found in the tutorial section of the User's Guide located at Appendix H. This manual is designed to allow the novice user to fully utilize the capabilities of the system, within his particular password limitations. Additionally, the Oracle code used to create the prototype is located at Appendix I.

VI. CONCLUSIONS AND RECOMMENDATIONS

In developing our design and prototype we had to first gain a thorough understanding of what the current database does and why it was designed the way it was. We found several obstacles to this process. First, we found no documentation as to why the system was designed the way it was originally, to support the existing EER diagrams. Second, we found that a lot of the attributes had not been deleted when they were no longer needed, and that a lot of the comments for the attributes were cryptic. In designing the relational system, we eliminated unneeded fields and added functionality for current and future requirements. We further designed the prototype to be user friendly to even the novice user. This chapter contains lessons learned in developing the design and prototype, and comparisons of the current network model to the proposed relational model.

A. LESSONS LEARNED

One of the biggest problems we faced in determining what the requirements were for the West Point database was the lack of up-to-date information concerning the needs and desires of the major users of the system. Few updates of the design or of future needs were ever compiled. Compounding this problem was the sometimes cryptic or nonexistent comments for the data items contained in the various data dictionaries. In some cases, the comments that were there were incorrect, adding confusion. These problems forced us to spend many long hours in an attempt to decipher the data dictionaries and determine exactly what was required for the new database design.

The above stated problems resulted, in part, from the major users not realizing the importance of periodic updates. Often, if not always, they returned a "no changes" reply to the requests for information sent out by the DBA. These non-replies coupled with the relative inflexibility of the network database model (discussed further in Section B) make it easy to understand the past difficulties in incorporating changes into such a complex system, while continuing the data processing requirements for over 4000 cadets and more than 500 staff and faculty members.

A key lesson learned from this project is that detailed documentation of all design decisions and requirements, from all users of the system, is critical to the success and understanding of any database design. Without clear comments and timely feedback from the major users, no database design will ever be accurate, up-to-date, or easily understandable.

B. COMPARISONS OF THE CURRENT NETWORK MODEL TO THE PROPOSED RELATIONAL MODEL

In *A Practical Guide to Data Base Design*, by Rex Hogan, several advantages and disadvantages are described for databases in general. Hogan first discusses data independence. Data Independence is the concept that an application does not require any knowledge of how the data is physically stored, that is what the DBMS accomplishes. In the network model, periodic fine tuning must be accomplished which usually requires the unloading of the data in the database. Most of these same changes can be accomplished in the relational model with no additional manipulation of data. Then he discusses complex data relationships. Both the network and relational models can support very complex data structures to allow data to be placed where it logically belongs. However, the relational model does not incur the additional overhead of maintaining the links required in the network model. Therefore, new data fields can, in general, be added without disruptions and can be used immediately in the relational model. [Ref. 4]

The bottom line is that for an application that must maintain flexibility for quick and/or frequent change in the future, the relational model is the better candidate to accomplish this task. Although West Point seems like a rather stable environment, many changes occur which alter the attributes and their relationships to each other in the database. Such changes include: changing the academic scale from 3.0 to 4.33, the admittance of women in 1976, and the revision of the academic system to allow for majors and for cadets to make their own schedules. Given this changing environment at West Point , the relational model will provide the needed flexibility to carry USMA's data processing into the future.

The user interface of West Point's current DBMS was not designed to be user friendly. Programs must be written to perform each desired query. If these queries have to be changed at all, the program must be edited, recompiled, and rerun. A novice user must follow exact, detailed instructions for a particular query. The Oracle based user interface, used for the relational model, allows a flexible menu-driven interface to be designed with minimal effort by the professional staff. Because of this friendly interface, the information contained in the database can be readily accessible to all system users, not just a select few.

This ease of access increases the value of the information contained in the West Point DBMS.

The primary mission of the staff and faculty, at West Point, is to provide education and guidance to the approximate 4000 members of the Corps of Cadets. The ability to obtain information about any cadet or particular group of cadets easily and efficiently can not help but improve the support given to the Corps. Because of the increased flexibility allowing the DBA to easily and quickly expand or change the database, and the increased accessibility of data by all users, we feel that the relational database model better suits the needs of West Point.

In conclusion, it is important to note that this thesis presents only one of many possible solutions to the task of converting West Point's database from a network to a relational model. Whenever possible we chose to conserve space in the database, and eliminate duplicate fields, as opposed to concentrating on speed. The design was also created to accommodate a wide range of users, from novice to expert, and may easily be tailored to meet the needs of any one particular user group. Further, in order to due justice to the enormous task of a West Point database conversion, Mark Hendrickson's thesis entitled *A Methodology for Handling Data Errors and Inconsistencies in Database System Conversions* must be carefully studied and analyzed in conjunction with this thesis [Ref. 3].

APPENDIX A

EXTRACTS FROM CURRENT ODDS

This appendix contains extracts from the CIDB, Scheduling, and Candidate on-line data dictionaries. These extracts are used to illustrate examples of inconsistencies between the databases, and to show a lack of adequate documentation in the Scheduling database. These examples are located in Chapter IV.

```
****HOST-RECORD-NAME****************TYPE-LENGTH***ACCESS-CONTROL***AEGIS-DELETE/ENABLE****LOCATION-MODE****PATH-TO-HOST-RECORD*****
**  SCHED-BOOK-RECORD                   F       128          O                 O              O              V          HJA          **
**                                                                                                                                    **
**  IDENTIFIER-SYNS:                                                        ADD-SYNS:                                                 **
***************************************************************************************************************************************

  **SYNONYM/LONG-NAME***************IDENT***START***LENGTH**REPEAT**JUSTIFY**FILL**NULL*DERIVED*USAGE**SYNTAX***COBOL-PICTURE*******
KCA/SCHED-BOOK-STOCK-NUMBER                    1      15      0       L                    O           PIC      X(15)
       PROPONENT: ORD     SOURCE: ORD     COLLECTOR: ORD     COLL-FREQ:           UPDATE PROPONENTS:  ORD
  **SYNONYM/LONG-NAME***************IDENT***START***LENGTH**REPEAT**JUSTIFY**FILL**NULL*DERIVED*USAGE**SYNTAX***COBOL-PICTURE*******
KCB/SCHED-BOOK-ISSUE-CODE                     16       1      0       L                    O           PIC      X
       PROPONENT: ORD     SOURCE: ORD     COLLECTOR: ORD     COLL-FREQ:           UPDATE PROPONENTS:  ORD
  **SYNONYM/LONG-NAME***************IDENT***START***LENGTH**REPEAT**JUSTIFY**FILL**NULL*DERIVED*USAGE**SYNTAX***COBOL-PICTURE*******
KCC/SCHED-BOOK-TITLE                          17      25      0       L                    O           PIC      X(25)
       PROPONENT: ORD     SOURCE: ORD     COLLECTOR: ORD     COLL-FREQ:           UPDATE PROPONENTS:  ORD
  **SYNONYM/LONG-NAME***************IDENT***START***LENGTH**REPEAT**JUSTIFY**FILL**NULL*DERIVED*USAGE**SYNTAX***COBOL-PICTURE*******
KCD/SCHED-BOOK-AUTHOR                         42      27      0       L                    O           PIC      X(27)
       PROPONENT: ORD     SOURCE: ORD     COLLECTOR: ORD     COLL-FREQ:           UPDATE PROPONENTS:  ORD
  **SYNONYM/LONG-NAME***************IDENT***START***LENGTH**REPEAT**JUSTIFY**FILL**NULL*DERIVED*USAGE**SYNTAX***COBOL-PICTURE*******
KCE/SCHED-BOOK-UNIT-PRICE                     69       5      0       R                    O           PIC      999V99
       PROPONENT: ORD     SOURCE: ORD     COLLECTOR: ORD     COLL-FREQ:           UPDATE PROPONENTS:  ORD
  **SYNONYM/LONG-NAME***************IDENT***START***LENGTH**REPEAT**JUSTIFY**FILL**NULL*DERIVED*USAGE**SYNTAX***COBOL-PICTURE*******
KCF/SCHED-BOOK-TRANSACTION-DATE               74       4      0       L                    O           PIC      9(4)
       PROPONENT: ORD     SOURCE: ORD     COLLECTOR: ORD     COLL-FREQ:           UPDATE PROPONENTS:  ORD
  **SYNONYM/LONG-NAME***************IDENT***START***LENGTH**REPEAT**JUSTIFY**FILL**NULL*DERIVED*USAGE**SYNTAX***COBOL-PICTURE*******
KCG/SCHED-BOOK-TRANSACTION-CODE               78       2      0       L                    O           PIC      X(2)
       PROPONENT: ORD     SOURCE: ORD     COLLECTOR: ORD     COLL-FREQ:           UPDATE PROPONENTS:  ORD
  **SYNONYM/LONG-NAME***************IDENT***START***LENGTH**REPEAT**JUSTIFY**FILL**NULL*DERIVED*USAGE**SYNTAX***COBOL-PICTURE*******
KCH/SCHED-BOOK-EXTENDED-PRICE                 80       8      0       R                    O           PIC      999999V99
       PROPONENT: ORD     SOURCE: ORD     COLLECTOR: ORD     COLL-FREQ:           UPDATE PROPONENTS:  ORD
  **SYNONYM/LONG-NAME***************IDENT***START***LENGTH**REPEAT**JUSTIFY**FILL**NULL*DERIVED*USAGE**SYNTAX***COBOL-PICTURE*******
KCI/SCHED-BOOK-UNIT-OF-ISSUE                  88       2      0       L                    O           PIC      X(2)
       PROPONENT: ORD     SOURCE: ORD     COLLECTOR: ORD     COLL-FREQ:           UPDATE PROPONENTS:  ORD
  **SYNONYM/LONG-NAME***************IDENT***START***LENGTH**REPEAT**JUSTIFY**FILL**NULL*DERIVED*USAGE**SYNTAX***COBOL-PICTURE*******
KCJ/SCHED-BOOK-QUANTITY-ON-HAND               90       5      0       R                    O           PIC      9(5)
       PROPONENT: ORD     SOURCE: ORD     COLLECTOR: ORD     COLL-FREQ:           UPDATE PROPONENTS:  ORD
  **SYNONYM/LONG-NAME***************IDENT***START***LENGTH**REPEAT**JUSTIFY**FILL**NULL*DERIVED*USAGE**SYNTAX***COBOL-PICTURE*******
KCK/SCHED-BOOK-EST-DELIVERY=DATE              95       4      0       L                    O           PIC      9(4)
       PROPONENT: ORD     SOURCE: ORD     COLLECTOR: ORD     COLL-FREQ:           UPDATE PROPONENTS:  ORD
  **SYNONYM/LONG-NAME***************IDENT***START***LENGTH**REPEAT**JUSTIFY**FILL**NULL*DERIVED*USAGE**SYNTAX***COBOL-PICTURE*******
KCL/SCHED-BOOK-PROCURE-INST-NO                99       7      0       L                    O           PIC      X(7)
       PROPONENT: ORD     SOURCE: ORD     COLLECTOR: ORD     COLL-FREQ:           UPDATE PROPONENTS:  ORD
  **SYNONYM/LONG-NAME***************IDENT***START***LENGTH**REPEAT**JUSTIFY**FILL**NULL*DERIVED*USAGE**SYNTAX***COBOL-PICTURE*******
KCM/SCHED-BOOK-PROCURE-ACT                   106       1      0       L                    O           PIC      X
       PROPONENT: ORD     SOURCE: ORD     COLLECTOR: ORD     COLL-FREQ:           UPDATE PROPONENTS:  ORD
  **SYNONYM/LONG-NAME***************IDENT***START***LENGTH**REPEAT**JUSTIFY**FILL**NULL*DERIVED*USAGE**SYNTAX***COBOL-PICTURE*******
KCN/SCHED-BOOK-REQUEST-QUAN                  107       5      0       R                    O           PIC      9(5)
       PROPONENT: ORD     SOURCE: ORD     COLLECTOR: ORD     COLL-FREQ:           UPDATE PROPONENTS:  ORD
  **SYNONYM/LONG-NAME***************IDENT***START***LENGTH**REPEAT**JUSTIFY**FILL**NULL*DERIVED*USAGE**SYNTAX***COBOL-PICTURE*******
KCO/SCHED-BOOK-LOCATION-CODE                 112       5      0       L                    O           PIC      X(5)
       PROPONENT: ORD     SOURCE: ORD     COLLECTOR: ORD     COLL-FREQ:           UPDATE PROPONENTS:  ORD
  **SYNONYM/LONG-NAME***************IDENT***START***LENGTH**REPEAT**JUSTIFY**FILL**NULL*DERIVED*USAGE**SYNTAX***COBOL-PICTURE*******
KCP/SCHED-BOOK-EXPAND                        117      12      0                                        PIC      X(12)
       PROPONENT: ORD     SOURCE: ORD     COLLECTOR: ORD     COLL-FREQ:           UPDATE PROPONENTS:  ORD
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        VALSPEC LEGAL VALUES:
               A     B     C     D     E
                                                      *VALFUNC DECODED VALUES*
         A    VARSITY                                                   B    JR VARSITY
         C    PLEBE TEAM
  **SYNONYM/LONG-NAME***************IDENT***START***LENGTH**REPEAT**JUSTIFY**FILL**NULL*DERIVED*USAGE**SYNTAX***COBOL-PICTURE*******
HQW/SCHED-CADET-TURN-COME-BK-FLAG            108         1    0        L                    0           PIC      X
        PROPONENT: S1      SOURCE: S1      COLLECTOR: S1      COLL-FREQ:         UPDATE PROPONENTS:  S1
        VALSPEC LEGAL VALUES:
               C     T
                                                      *VALFUNC DECODED VALUES*
         C    CADET HAS BEEN READMITTED (COMEBACK)                      T    CADET HAS BEEN TURNED BACK WITHIN THE CORPS
  **SYNONYM/LONG-NAME***************IDENT***START***LENGTH**REPEAT**JUSTIFY**FILL**NULL*DERIVED*USAGE**SYNTAX***COBOL-PICTURE*******
HQX/SCHED-CADET-DEF-TURN-BK-FLAG             109         1    0        L                    0           PIC      X
        PROPONENT: ORD     SOURCE: ORD     COLLECTOR: ORD     COLL-FREQ:         UPDATE PROPONENTS:  ORD
        VALSPEC LEGAL VALUES:
               Y
                                                      *VALFUNC DECODED VALUES*
         Y    YES
  **SYNONYM/LONG-NAME***************IDENT***START***LENGTH**REPEAT**JUSTIFY**FILL**NULL*DERIVED*USAGE**SYNTAX***COBOL-PICTURE*******
HQY/SCHED-CADET-CHANGE-FLAG                  110         1    0        L                    0           PIC      X
        PROPONENT:         SOURCE:         COLLECTOR:         COLL-FREQ:         UPDATE PROPONENTS:
  **SYNONYM/LONG-NAME***************IDENT***START***LENGTH**REPEAT**JUSTIFY**FILL**NULL*DERIVED*USAGE**SYNTAX***COBOL-PICTURE*******
HQZ/SCHED-CADET-SEPARATION-FLAG              111         1    0        L                    0           PIC      X
        PROPONENT: S1      SOU×CE: S1      COLLECTOR: S1      COLL-FREQ:         UPDATE PROPONENTS:  S1
        VALSPEC LEGAL VALUES:
               W     I     S     A
                                                      *VALFUNC DECODED VALUES*
         A    ABSENT                                                    I    INACTIVE
         S    CADET HAS BEEN SEPARATED FROM THE CORPS                   W    CADET HAS BEEN WITHDRAWN FROM THE CORPS
  **SYNONYM/LONG-NAME***************IDENT***START***LENGTH**REPEAT**JUSTIFY**FILL**NULL*DERIVED*USAGE**SYNTAX***COBOL-PICTURE*******
HRA/SCHED-CADET-GROUP-FLAG1                  112         1    0        L                    0           PIC      X
        PROPONENT:         SOURCE:         COLLECTOR:         COLL-FREQ:         UPDATE PROPONENTS:
  **SYNONYM/LONG-NAME***************IDENT***START***LENGTH**REPEAT**JUSTIFY**FILL**NULL*DERIVED*USAGE**SYNTAX***COBOL-PICTURE*******
HRB/SCHED-CADET-GROUP-FLAG2                  113         1             L                    0           PIC      X
        PROPONENT:         SOURCE:         COLLECTOR:         COLL-FREQ:         UPDATE PROPONENTS:
  **SYNONYM/LONG-NAME***************IDENT***START***LENGTH**REPEAT**JUSTIFY**FILL**NULL*DERIVED*USAGE**SYNTAX***COBOL-PICTURE*******
HRC/SCHED-CADET-GROUP-FLAG3                  114         1             L                    0           PIC      X
        PROPONENT:         SOURCE:         COLLECTOR:         COLL-FREQ:         UPDATE PROPONENTS:
  **SYNONYM/LONG-NAME***************IDENT***START***LENGTH**REPEAT**JUSTIFY**FILL**NULL*DERIVED*USAGE**SYNTAX***COBOL-PICTURE*******
HRD/SCHED-CADET-GROUP-FLAG4                  115         1             L                    0           PIC      X
        PROPONENT:         SOURCE:         COLLECTOR:         COLL-FREQ:         UPDATE PROPONENTS:
  **SYNONYM/LONG-NAME***************IDENT***START***LENGTH**REPEAT**JUSTIFY**FILL**NULL*DERIVED*USAGE**SYNTAX***COBOL-PICTURE*******
HRE/SCHED-CADET-GROUP-FLAG5                  116         1             L                    0           PIC      X
        PROPONENT:         SOURCE:         COLLECTOR:         COLL-FREQ:         UPDATE PROPONENTS:
  **SYNONYM/LONG-NAME***************IDENT***START***LENGTH**REPEAT**JUSTIFY**FILL**NULL*DERIVED*USAGE**SYNTAX***COBOL-PICTURE*******
HRF/SCHED-CADET-GROUP-FLAG6                  117         1             L                    0           PIC      X
        PROPONENT:         SOURCE:         COLLECTOR:         COLL-FREQ:         UPDATE PROPONENTS:
  **SYNONYM/LONG-NAME***************IDENT***START***LENGTH**REPEAT**JUSTIFY**FILL**NULL*DERIVED*USAGE**SYNTAX***COBOL-PICTURE*******
HRG/SCHED-CADET-GROUP-FLAG7                  118         1             L                    0           PIC      X
        PROPONENT:         SOURCE:         COLLECTOR:         COLL-FREQ:         UPDATE PROPONENTS:
  **SYNONYM/LONG-NAME***************IDENT***START***LENGTH**REPEAT**JUSTIFY**FILL**NULL*DERIVED*USAGE**SYNTAX***COBOL-PICTURE*******
HRH/SCHED-CADET-GROUP-FLAG8                  119         1             L                    0           PIC      X
        PROPONENT:         SOURCE:         COLLECTOR:         COLL-FREQ:         UPDATE PROPONENTS:
  **SYNONYM/LONG-NAME***************IDENT***START***LENGTH**REPEAT**JUSTIFY**FILL**NULL*DERIVED*USAGE**SYNTAX***COBOL-PICTURE*******
HRI/SCHED-CADET-GROUP-FLAG9                  120         1             L                    0           PIC      X
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 **SYNONYM/LONG-NAME**************IDENT***START***LENGTH**REPEAT**JUSTIFY**FILL**NULL*DERIVED*USAGE**SYNTAX***COBOL-PICTURE*******
AFC/RECORD-CREATION-DATE                     241       4    0      L                    O              PIC       X(4).
          PROPONENT: DAD      SOURCE: DAD     COLLECTOR:            COLL-FREQ:          UPDATE PROPONENTS:  DAD
          COMMENT: 001        PAGE: 001       DATE: 830811          SECURITY:           PROPONENT: DAD     AUTHOR:
                                            DESCRIPTION:                                                  *
                                            THE JULIAN DATE THE APPLICANT'S COMPUTER FILE WAS CREATED.    *
 **SYNONYM/LONG-NAME**************IDENT***START***LENGTH**REPEAT**JUSTIFY**FILL**NULL*DERIVED*USAGE**SYNTAX***COBOL-PICTURE*******
AFD/RECORD-LAST-UPDATE-DATE                  245       4    0      L                    O              PIC       X(4).
          PROPONENT: DAD      SOURCE: DAD     COLLECTOR:            COLL-FREQ:          UPDATE PROPONENTS:  DAD
          COMMENT: 001        PAGE: 001       DATE: 830811          SECURITY:           PROPONENT: DAD     AUTHOR:
                                            DESCRIPTION:                                                  *
                                            THE JULIAN DATE OF THE LAST UPDATE TO THE APPLICANT'S FILE.   *
 **SYNONYM/LONG-NAME**************IDENT***START***LENGTH**REPEAT**JUSTIFY**FILL**NULL*DERIVED*USAGE**SYNTAX***COBOL-PICTURE*******
AFE/FILE-ACTIVATION-DATE                     249       4    0      L                    O              PIC       X(4).
          PROPONENT: DAD      SOURCE: DAD     COLLECTOR:            COLL-FREQ:          UPDATE PROPONENTS:  DAD
 **SYNONYM/LONG-NAME**************IDENT***START***LENGTH**REPEAT**JUSTIFY**FILL**NULL*DERIVED*USAGE**SYNTAX***COBOL-PICTURE*******
AFF/FILE-MAINTENANCE-DATA-EXPAND             253       4    0      L                    O              PIC       X(4).
          PROPONENT: DAD      SOURCE: DAD     COLLECTOR:            COLL-FREQ:          UPDATE PROPONENTS:  DAD
          COMMENT: 001        PAGE: 001       DATE: 891207          SECURITY:           PROPONENT: DAD     AUTHOR:
                                           DESCRIPTION:
                                           THIS ELEMENT RESERVED FOR FUTURE EXPANSION PIC X(4).            *
 **SYNONYM/LONG-NAME**************IDENT***START***LENGTH**REPEAT**JUSTIFY**FILL**NULL*DERIVED*USAGE**SYNTAX***GROUP-ITEM*********
AGA/ADMISSIONS-DECISION-SCORES               257      53    0      L                    O              GROUP
          PROPONENT: DAD      SOURCE: DAD     COLLECTOR:            COLL-FREQ:          UPDATE PROPONENTS:  DAD
          COMMENT: 001        PAGE: 001       DATE: 830811          SECURITY:           PROPONENT: DAD     AUTHOR:
                                            DESCRIPTION:                                                  *
                                            A GROUP ELEMENT OF SCORES AND INDICATORS USED TO ESTABLISH    *
                                            THE QUALIFICATION OF CANDIDATES FOR ADMISSION TO USMA.        *
                                            WHOLE-CANDIDATE-SCORE, COLLEGE-ENTRANCE-EXAM-RANK,            *
                                            PHYSICAL-APTITUDE-EXAM-SCORE, LEADERSHIP-POTENTIAL-SCORE      *
                                            QUALIFIED-ALTERNATE-SCORE, FILE-EVALUATION-SCORE              *
                                            ENTRANCE-CEER-TYPE                                            *
 **SYNONYM/LONG-NAME**************IDENT***START***LENGTH**REPEAT**JUSTIFY**FILL**NULL*DERIVED*USAGE**SYNTAX***COBOL-PICTURE*******
AGB/WHOLE-CANDIDATE-SCORE                    257       4    0      R                    O              PIC       9(4).
          PROPONENT: DAD      SOURCE: DAD     COLLECTOR:            COLL-FREQ:          UPDATE PROPONENTS:  DAD
          COMMENT: 001        PAGE: 001       DATE: 830811          SECURITY:           PROPONENT: DAD     AUTHOR:
                                            DESCRIPTION:                                                  *
                                            A COMPOSITE SCORE INDICATING AN INDIVIDUAL'S TOTAL PREDICTED  *
                                            POTENTIAL FOR ADMISSIONS TO USMA.                             *
                                            COMPUTED IAW THE USMA ACADEMIC BOARD DIRECTIVE ON THE         *
                                            QUALIFICATION OF CANDIDATES FOR ADMISSION TO USMA.            *
 **SYNONYM/LONG-NAME**************IDENT***START***LENGTH**REPEAT**JUSTIFY**FILL**NULL*DERIVED*USAGE**SYNTAX***COBOL-PICTURE*******
AGE/COLLEGE-ENTRANCE-EXAM-RANK               261       3    0      R                    O              PIC       9(3).
          PROPONENT: DAD      SOURCE: DAD     COLLECTOR:            COLL-FREQ:          UPDATE PROPONENTS:  DAD
          COMMENT: 001        PAGE: 001       DATE: 830811          SECURITY:           PROPONENT: DAD     AUTHOR:
                                            DESCRIPTION:                                                  *
                                            A WEIGHTED MEAN OF THE INDIVIDUAL'S COLLEGE BOARD SCORES AND  *
                                            HIGH SCHOOL CLASS RANK SCORE. MAY BE COMPUTED FROM:           *
                                            PRELIMINARY SCOLASTIC APTITUDE TEST (PSAT) SCHOLASTIC         *
                                            APTITUDE TEST (SAT)  AMERICAN COLLEGE TEST (ACT)              *
                                            OR NEW AMERICAN COLLEGE TEST (NACT) THE SOURCE                *
                                            IS IDENTIFIED BY THE CEER-SOURCE-FLAG AS FOLLOWS:             *
                                            'A' 'B' 'C' 'D' 'E' 'F' 'G' 'H' FORMULA ARE DESCRIBED IN THE  *
                                            USMA ACADEMIC BOARD DIRECTIVE ON QUALIFICATION OF CANDIDATES  *
                                            FOR ADMISSIONS.                                               *
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  **SYNONYM/LONG-NAME***************IDENT***START***LENGTH**REPEAT**JUSTIFY**FILL**NULL*DERIVED*USAGE**SYNTAX***COBOL-PICTURE*******
AGF/ACADEMIC-SUPPLEMENT-SCORE                     264        3      0       R                 0               PIC        S9(3).
         PROPONENT: DAD       SOURCE: DAD      COLLECTOR:              COLL-FREQ:           UPDATE PROPONENTS:  DAD
         COMMENT: 001         PAGE: 001        DATE: 830811            SECURITY:            PROPONENT: DAD      AUTHOR:
                                            DESCRIPTION:                                                          *
                                            ACADEMIC-SUPPLEMENT-SCORE.                                            *
  **SYNONYM/LONG-NAME***************IDENT***START***LENGTH**REPEAT**JUSTIFY**FILL**NULL*DERIVED*USAGE**SYNTAX***COBOL-PICTURE*******
AGG/PHYSICAL-APTITUDE-EXAM-SCORE                  267        3      0       R                 0               PIC        9(3).
         PROPONENT: DAD       SOURCE: DAD      COLLECTOR:              COLL-FREQ:           UPDATE PROPONENTS:  DAD
         COMMENT: 001         PAGE: 001        DATE: 830811            SECURITY:            PROPONENT: DAD      AUTHOR:
                                            DESCRIPTION:                                                          *
                                            A COMPOSITE SCORE ON THE PHYSICIAL APTITUDE EXAM DERIVED              *
                                            BY COMPARING EACH OF THE COMPONENT SCORES TO A TRANSLATION            *
                                            TABLE THEN SUMMING THE TRANSLATED SCORES. RANGE 200-800               *
  **SYNONYM/LONG-NAME***************IDENT***START***LENGTH**REPEAT**JUSTIFY**FILL**NULL*DERIVED*USAGE**SYNTAX***COBOL-PICTURE*******
AGH/PAE-SCORE2                                    270        3      0       R                 0               PIC        9(3).
         PROPONENT: DAD       SOURCE: DAD      COLLECTOR:              COLL-FREQ:           UPDATE PROPONENTS:  DAD
         COMMENT: 001         PAGE: 001        DATE: 830815            SECURITY:            PROPONENT: DAD      AUTHOR:
                                            DESECRIPTION:                                                         *
                                            PAE-SCORE2                                                            *
                                            THE LOWER PAE SCORE IF TWO TESTS SCORED.                              *
                                            RANGE: 200-800                                                        *
  **SYNONYM/LONG-NAME***************IDENT***START***LENGTH**REPEAT**JUSTIFY**FILL**NULL*DERIVED*USAGE**SYNTAX***COBOL-PICTURE*******
AGI/PAE-SCORE3                                    273        3      0       R                 0               PIC        9(3).
         PROPONENT:           SOURCE: DAD      COLLECTOR:              COLL-FREQ:           UPDATE PROPONENTS:  DAD
         COMMENT: 001         PAGE: 001        DATE: 830815            SECURITY:            PROPONENT:          AUTHOR:
                                            DESCRIPTION:                                                          *
                                            PAE-SCORE3                                                            *
                                            THE LOWER PAE SCORE IF THREE TESTS SCORED.                            *
                                            RANGE: 200-800                                                        *
  **SYNONYM/LONG-NAME***************IDENT***START***LENGTH**REPEAT**JUSTIFY**FILL**NULL*DERIVED*USAGE**SYNTAX***COBOL-PICTURE*******
AGJ/PAE-SOURCE-INDIC                              276        1      0       L                 0               PIC        X(1).
         PROPONENT: DAD       SOURCE: DAD      COLLECTOR:              COLL-FREQ:           UPDATE PROPONENTS:  DAD
         COMMENT: 001         PAGE: 001        DATE: 830815            SECURITY:            PROPONENT: DAD      AUTHOR:
                                            PAE-SCORE-CODE                                                        *
                                            R = ROTC, Z = MAILOUT, U = USMA                                       *
  **SYNONYM/LONG-NAME***************IDENT***START***LENGTH**REPEAT**JUSTIFY**FILL**NULL*DERIVED*USAGE**SYNTAX***COBOL-PICTURE*******
AGK/LEADERSHIP-POTENTIAL-SCORE                    277        3      0       R                 0               PIC        9(3).
         PROPONENT: DAD       SOURCE: DAD      COLLECTOR:              COLL-FREQ:           UPDATE PROPONENTS:  DAD
         COMMENT: 001         PAGE: 001        DATE: 830815            SECURITY:            PROPONENT: DAD      AUTHOR:
                                            DESCRIPTION:                                                          *
                                            A NUMERIC EVALUATION OF AN INDIVIDUAL'S POTENTIAL AS A LEADER         *
                                            COMPUTED IAW THE USMA ACADEMIC BOARD DIRECTIVE ON THE                 *
                                            QUALIFICATION OF CANDIDATES FOR ADMISSION TO USMA.                    *
                                            RANGE 200-800 USED AS A BASIS FOR DETERMINING: LEADERSHIP-            *
                                            EVALUATION-STATUS, LEADERSHIP-QUALITY-ZONE.                           *
  **SYNONYM/LONG-NAME***************IDENT***START***LENGTH**REPEAT**JUSTIFY**FILL**NULL*DERIVED*USAGE**SYNTAX***COBOL-PICTURE*******
AGL/QUALIFIED-ALTERNATE-SCORE                     280        4      0       R                 0               PIC        9(4).
         PROPONENT: DAD       SOURCE: DAD      COLLECTOR:              COLL-FREQ:           UPDATE PROPONENTS:  DAD
         COMMENT: 001         PAGE: 001        DATE: 830815            SECURITY:            PROPONENT: DAD      AUTHOR:
                                            DESCRIPTION:                                                          *
                                            A NUMERICAL QUALITY RATING OF AN INDIVIDUAL BASED ON HIS MOST         *
                                            OUTSTANDING TALENT COMPUTED IAW THE ACADEMIC BOARD DIRECTIVE          *
                                            ON THE QUALIFICATIONS OF CANDIDATES FOR ADMISSIONS TO USMA.           *
                                            IS EQUAL TO WMS WHEN ACADEMIC-QUALITY-ZONE, PHYSICIAL-QUALITY         *
                                            ZONE, AND LEADERSHIP-QUALITY-ZONE, EQUAL 'P' ... NEVER LOWER          *
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                                         A NUMERAL EVALUATION OF AN INDIVIDUAL'S PARTICIPATION IN        *
                                         EXTRACURRICULAR ACTIVITIES OTHER THAN 'ATHLETICS' COMPUTED      *
                                         IAW THE USMA ACADEMIC BOARD DIRECTIVE ON THE QUALIFICATION      *
                                       . OF CANDIDATES FOR ADMISSIONS TO USMA.   RANGE IS 200-800        *
  **SYNONYM/LONG-NAME***************IDENT***START***LENGTH**REPEAT**JUSTIFY**FILL**NULL*DERIVED*USAGE**SYNTAX***COBOL-PICTURE******
APC/ATHLETIC-ACTIVITIES-SCORE                492     3      0      R                     O            PIC       9(3).
          PROPONENT: DAD      SOURCE: DAD     COLLECTOR:           COLL-FREQ:         UPDATE PROPONENTS:  DAD
          COMMENT: 001        PAGE: 001       DATE: 830826         SECURITY:          PROPONENT: DAD      AUTHOR:
                                         DESCRIPTION:                                                    *
                                         A NUMERAL EVALUATION OF AN INDIVIDUALS ATHLETIC POTENTIAL       *
                                         FOR USMA. COMPUTED IAW THE USMA ACADEMIC BOARD DIRECTIVE ON     *
                                         QUALIFICATIONS FOR ADMISSIONS. RANGE 200-800                    *
  **SYNONYM/LONG-NAME***************IDENT***START***LENGTH**REPEAT**JUSTIFY**FILL**NULL*DERIVED*USAGE**SYNTAX***COBOL-PICTURE******
APD/FACULTY-APPRAISAL-SCORE                  495     3      0      R                     O            PIC       9(3).
          PROPONENT: DAD      SOURCE: DAD     COLLECTOR:           COLL-FREQ:         UPDATE PROPONENTS:  DAD
          COMMENT: 001        PAGE. 001       DATE: 830826         SECURITY:          PROPONENT: DAD      AUTHOR:
                                         DESCRIPTION:                                                    *

                                         THE AVERAGE SCORE OBTAINED ON USMA 21-16. SCHOOLS OFFICIAL      *
                                         EVALUATION OF A CANDIDATE. COMPUTED FROM FACULTY-APPRAISAL-     *
                                         DATA. RANGE IS 200-800.                                         *
  **SYNONYM/LONG-NAME***************IDENT***START***LENGTH**REPEAT**JUSTIFY**FILL**NULL*DERIVED*USAGE**SYNTAX***COBOL-PICTURE******
APE/HIGH-SCHOOL-CLASS-RANK-SCORE             498     3      0      R                     O            PIC       9(3).
          PROPONENT: DAD      SOURCE: DAD     COLLECTOR:           COLL-FREQ:         UPDATE PROPONENTS:  DAD
          COMMENT: 001        PAGE: 001       DATE: 830826         SECURITY:          PROPONENT: DAD      AUTHOR:
                                         DESCRIPTION:                                                    *
                                         A SCORE OBTAINED FROM THE EDUCATIONAL TESTING SERVICE STANDARD*
                                         CHART, CONVERTING A CANDIDATE'S CUMULATIVE HIGH SCHOOL CLASS    *
                                         STANDARD TO A SCALE OF ?00 - 800                                *
                                                                                                         *
                                                                                                         *
  **SYNONYM/LONG-NAME***************IDENT***START***LENGTH**REPEAT**JUSTIFY**FILL**NULL*DERIVED*USAGE**SYNTAX***COBOL-PICTURE******
APF/COLLEGE-BOARD-AVERAGE                    501     3      0      R                     O            PIC       9(3).
          PROPONENT: DAD      SOURCE: DAD     COLLECTOR:           COLL-FREQ:         UPDATE PROPONENTS:  DAD
          COMMENT: 001        PAGE: 001       DATE: 830816         SECURITY:          PROPONENT: DAD      AUTHOR:
                                         DESCRIPTION:                                                    *
                                         COLLEGE BOARD AVERAGE SCORE COMPUTED AS AN UNWEIGHTED MEAN      *
                                         OF THE COLLEGE BOARD SCORES USED TO COMPUTE THE COLLEGE-        *
                                         ENTRANCE-EXAM-RANK-SCORE. SEE THE DATA ELEMENT DEFINITION FOR  *
                                         THE MEANING OF THE FLAGS. IF THE COLLEGE TEST SCORES WERE USED*
                                         TO COMPUTE THE COLLEGE-ENTRANCE-RANK-SCORE. THE ACT SCORES.     *
                                         ARE FIRST CONVERTED TO A MEAN SCALE OF 500 WITH A STANDARD      *
                                         DEVIATION OF 100...                                             *
  **SYNONYM/LONG-NAME***************IDENT***START***LENGTH**REPEAT**JUSTIFY**FILL**NULL*DERIVED*USAGE**SYNTAX***COBOL-PICTURE******
APG/COMPENSATING-EVIDENCE                    504     4      0      R                     O            PIC       9(4).
          PROPONENT: DAD      SOURCE: DAD     COLLECTOR:           COLL-FREQ:         UPDATE PROPONENTS:  DAD
          COMMENT: 001        PAGE: 001       DATE: 830816         SECURITY:          PROPONENT: DAD      AUTHOR:
                                         DESCRIPTION:                                                    *
                                         THE SUM OF THE COLLEGE BOARD AVERAGE SCORE AND THE LEADERSHIP  *
                                         POTENTIAL SCORE.  IF CEER FLAG = 'A' OR 'D' .                   *
  **SYNONYM/LONG-NAME***************IDENT***START***LENGTH**REPEAT**JUSTIFY**FILL**NULL*DERIVED*USAGE**SYNTAX***COBOL-PICTURE******
APH/LC-SCORE                                 508     3      0      R                     O            PIC       9(3).
          PROPONENT: DAD      SOURCE: DAD     COLLECTOR:           COLL-FREQ:         UPDATE PROPONENTS:  DAD
          COMMENT: 001        PAGE: 001       DATE: 8308          SECURITY:          PROPONENT: DAD      AUTHOR:
                                         DESCRIPTION:                                                    *
                                         THE NUMERICIAL SUM OF THE LEADERSHIP-POTENTIAL-SCORE AND THE   *
```

```
         E      E  =  0 - POS                                              F      F  =  0 - NEG
         G      AB = AB - POS                                              H      AB = AB - NEG
  **SYNONYM/LONG-NAME**************IDENT***START***LENGTH**REPEAT**JUSTIFY**FILL**NULL*DERIVED*USAGE**SYNTAX***COBOL-PICTURE******
CAD/CADET-CURRENT-HEIGHT                          66        2      0       R              0      0              PIC       99.
         SUBSCHEMAS: CO-C-ALL
         PROPONENT: DPE       SOURCE: DPE      COLLECTOR: DPE      COLL-FREQ:          UPDATE PROPONENTS:  DPE
         COMMENT: 001         PAGE: 001        DATE:               SECURITY:           PROPONENT: DPE     AUTHOR:
                                            (2) INITIAL COLLECTOR: DPE (5) COLLECTION DATES: AS REQUIRED
                                            (3) RESPONSIBLE FOR UPDATE: DPE (6) VALIDATION DATES:                *
                                                                               AS REQUIRED                      *
                                            DESCRIPTION:
                                            THE CURRENT HEIGHT IN INCHES OF A CADET.
                                            COLLECTION METHOD:
                                            INITIALIZED FROM THE CANDIDATE DATA BASE ELEMENT "ADC".
                                            COLLECTED UPON ENTRANCE OF THE CADET AND REPOSTED. IT IS
                                            UPDATED QUARTERLY BY DPE FOR THE 4TH CLASS AND TWICE A YEAR      *
                                            FOR UPPER CLASS CADETS
  **SYNONYM/LONG-NAME**************IDENT***START***LENGTH**REPEAT**JUSTIFY**FILL**NULL*DERIVED*USAGE**SYNTAX***COBOL-PICTURE******
CAE/CADET-CURRENT-WEIGHT                          68        3      0       R              0      0              PIC       999.
         SUBSCHEMAS: CO-C-ALL
         PROPONENT: DPE       SOURCE: DPE      COLLECTOR: DPE      COLL-FREQ.          UPDATE PROPONENTS:  DPE
         COMMENT: 001         PAGE: 001        DATE:               SECURITY:           PROPONENT: DPE     AUTHOR:
                                            (2) INITIAL COLLECTOR: DPE (5) COLLECTION DATES: AS REQUIRED
                                            (3) RESPONSIBLE FOR UPDATE: DPE (6) VALIDATION DATES:                *
                                                                               AS REQUIRED                      *
                                            DESCRIPTION:
                                            THE CURRENT WEIGHT IN POUNDS OF A CADET.
                                            COLLECTION METHOD:
                                            INITIALIZED FROM THE CANDIDATE DATA BASE ELEMENT "ADD".
                                            COLLECTED UPON ENTRANCE OF THE CADET AND REPOSTED. IT IS
                                            UPDATED QUARTERLY  BY DPE FOR 4TH CLASS AND TWICE A YEAR         *
                                            FOR UPPER CLASS CADETS




  **SYNONYM/LONG-NAME**************IDENT***START***LENGTH**REPEAT**JUSTIFY**FILL**NULL*DERIVED*USAGE**SYNTAX***COBOL-PICTURE******
CAF/CADET-CURRENT-PULL-UPS                        71        2      0       R              0      0              PIC       99.
         PROPONENT: DPE       SOURCE: DPE      COLLECTOR: DPE      COLL-FREQ:          UPDATE PROPONENTS:  DPE
         COMMENT: 001         PAGE: 001        DATE: 800319        SECURITY:           PROPONENT: DPE     AUTHOR:
                                            (2) INITIAL COLLECTOR: DPE (5) COLLECTION DATES: AS REQUIRED
                                            (3) RESPONSIBLE FOR UPDATE: DPE (6) VALIDATION DATES:                *
                                                                               AS REQUIRED                      *
                                            DESCRIPTION:
                                            THE CURRENT PULL UPS A CADET HAS PERFORMED.
                                            COLLECTION METHOD:
                                            COLLECTED UPON ENTRANCE OF THE CADET AND REPOSTED. IT IS
                                            UPDATED MONTHLY BY DPE FOR 4TH CLASS AND TWICE A YEAR
                                            FOR UPPER CLASS CADETS.
```

```
        VALSPEC LEGAL VALUES:
              Y
                                                       *VALFUNC DECODED VALUES*
          Y   YES
 **SYNONYM/LONG-NAME****************.DENT***START***LENGTH**REPEAT**JUSTIFY**FILL**NULL*DERIVED*USAGE**SYNTAX***GROUP-ITEM*********
CBM/CADET-PERMANENT-COMPANY                    51        2     0       L                    0           GROUP
        SUBSCHEMAS: CO-C-ALL
        PROPONENT. S1      SOURCE: S1      COLLECTOR: S1       COLL-FREQ.        UPDATE PROPONENTS:  S1
        COMMENT: 001       PAGE: 001       DATE:               SECURITY:         PROPONENT. S1      AUTHOR:
                                        (2) INITIAL COLLECTOR: S1   (5) COLLECTION DATES: 08        *
                                        (3) RESPONSIBLE FOR UPDATE: S1   (6) VALIDATION DATES: 08     *
                                        DESCRIPTION:            INDIVIDUAL CADET
                                        A GROUP ITEM WHICH INCLUDES THE FOLLOWING DATA ELEMENTS.
                                                       CADET-PERM-COMPANY
                                                       CADET-PERM-REGIMENT
                                        COLLECTION METHOD:
                                        FOR THE NEW CLASS THIS IS GENERATED AS PART OF THE NEW CADET  *
                                        ENTRANCE PROCESSING CYCLE. FOR UPPER CLASS CADETS THIS MAY BE *
                                        DONE AT ANY TIME EITHER AD HOC OR AS A MASS CLASS CHANGE      *
                                                                                                      *
                                                                                                      *

 **SYNONYM/LONG-NAME***************IDENT***START***LENGTH**REPEAT**JUSTIFY**FILL**NULL*DERIVED*USAGE**SYNTAX***COBOL-PICTURE*******
CBN/CADET-PERM-COMPANY                         51        1     0       L                    0           VALSPEC  X.
        SUBSCHEMAS: CO-C-ALL
        PROPONENT: S1      SOURCE: S1      COLLECTOR: S1       COLL-FREQ:        UPDATE PROPONENTS:  S1
        COMMENT: 001       PAGE: 001       DATE:               SECURITY:         PROPONENT: S1      AUTHOR:
                                        (2) INITIAL COLLECTOR. S1   (5) COLLECTION DATES  08        *
                                        (3) RESPONSIBLE FOR UPDATE: S1   (6) VALIDATION DATES: 08     *
                                        DESCRIPTION:
                                        ONE OF 10 AUTHORIZED COMPANIES TO WHICH A CADET HAS BEEN
                                        ASSIGNED TO. THE CODES ARE:
                                        RANGE IS A, B, C, D, E, F, G, H, I, Z.
                                        COLLECTION METHOD:
                                        FOR THE NEW CLASS THIS IS GENERATED AS PART OF THE NEW CADET
                                        ENTRANCE PROCESSING CYCLE.
                                        FOR UPPER CLASS CADETS THIS MAY BE DONE AT ANY TIME.
                                        EITHER AD HOC OR AS A MASS CLASS CHANGE

        VALSPEC LEGAL VALUES:
              A     B     C     D     E     F     G     H     I     S     Z
 **SYNONYM/LONG-NAME***************IDENT***START***LENGTH**REPEAT**JUSTIFY**FILL**NULL*DERIVED*USAGE**SYNTAX***MAX VALUE**MIN VALUE
CBO/CADET-PERM-REGIMENT                        52        1     0       L                    0           RANGE   4          1
        SUBSCHEMAS: CO-C-ALL
        PROPONENT: S1      SOURCE: S1      COLLECTOR: S1       COLL-FREQ:        UPDATE PROPONENTS.  S1
        COMMENT: 001       PAGE: 001       DATE:               SECURITY:         PROPONENT: S1      AUTHOR:
                                        (2) INITIAL COLLECTOR: S1   (5) COLLECTION DATES: 08        *
                                        (3) RESPONSIBLE FOR UPDATE: S1   (6) VALIDATION DATES: 08     *
                                        DESCRIPTION:
                                        ONE OF 4 AUTHORIZED REGIMENTS TO WHICH A CADET HAS BEEN       *
                                        ASSIGNED.                                                     *
                                        RANGE IS 1 THRU 4.
                                        COLLECTION METHOD:
                                        FOR THE NEW CLASS THIS IS GENERATED AS PART OF THE NEW CADET  *
                                      . ENTRANCE PROCESSING CYCLE. FOR UPPER CLASS CADETS THIS MAY BE *
                                        DONE AT ANY TIME EITHER AD HOC OR AS A MASS CLASS CHANGE      *
                                                                                                      *
                                                                                                      *

  **SYNONYM/LONG-NAME**************IDENT***START***LENGTH**REPEAT**JUSTIFY**FILL**NULL*DERIVED*USAGE**SYNTAX***GROUP-ITEM*********
CBP/CADET-TEMPORARY-COMPANY                  53       2     0       L                        O            GROUP
      SUBSCHEMAS: CO-C-ALL
      PROPONENT: S1      SOURCE: S1      COLLECTOR: S1      COLL-FREQ:          UPDATE PROPONENTS:  S1
      COMMENT: 001       PAGE: 001       DATE:              SECURITY:           PROPONENT: S1       AUTHOR:
                                      (2) INITIAL COLLECTOR: S1              (5) COLLECTION DATES: *
                                      (3) RESPONSIBLE FOR UPDATE  S1         (6) VALIDATION DATES: *
                                      DESCRIPTION:
                                      A GROUP ITEM CONTAINING THE FOLLOWING 2 DATA ELEMENTS.
                                      COLLECTION METHOD:
                                      INPUT BY USCC AS REQUIRED.
  **SYNONYM/LONG-NAME**************IDENT***START***LENGTH**REPEAT**JUSTIFY**FILL**NULL*DERIVED*USAGE**SYNTAX***COBOL-PICTURE******
CBQ/CADET-TEMP-COMPANY                       53       1     0       L                        O            VALSPEC   X.
      SUBSCHEMAS: CO-C-ALL
      PROPONENT: S1      SOURCE: S1      COLLECTOR: S1      COLL-FREQ:          UPDATE PROPONENTS:  S1
      COMMENT: 001       PAGE: 001       DATE:              SECURITY:           PROPONENT: S1       AUTHOR:
                                      (2) INITIAL COLLECTOR: S1              (5) COLLECTION DATES: *
                                      (3) RESPONSIBLE FOR UPDATE:   S1       (6) VALIDATION DATES: *
                                      DESCRIPTION:
                                      THE COMPANY A CADET HAS BEEN TEMPORARILY ASSIGNED TO.
                                      COLLECTION METHOD:
                                      INPUT BY USCC AS REQUIRED.

      VALSPEC LEGAL VALUES:
            A     B     C     D     E     F     G     H     I     Z
  **SYNONYM/LONG-NAME**************IDENT***START***LENGTH**REPEAT**JUSTIFY**FILL**NULL*DERIVED*USAGE**SYNTAX***MAX VALUE**MIN VALUE
CBR/CADET-TEMP-REGIMENT                      54       1     0       L                        O            RANGE    4          1
      SUBSCHEMAS: CO-C-ALL
      PROPONENT: S1      SOURCE: S1      COLLECTOR: S1      COLL-FREQ:          UPDATE PROPONENTS:  S1
      COMMENT: 001       PAGE: 001       DATE:              SECURITY:           PROPONENT: S1       AUTHOR:
                                      (2) INITIAL COLLECTOR:   S1            (5) COLLECTION DATES: *
                                      (3) RESPONSIBLE FOR UPDATE:   S1       (6) VALIDATION DATES: *
                                      DESCRIPTION:
                                      THE REGIMENT A CADET HAS BEEN TEMPORARILY ASSIGNED.
                                      RANGE IS 1 THRU 4
                                      COLLECTION METHOD:
                                      INPUT BY USCC AS REQUIRED.
  **SYNONYM/LONG-NAME**************IDENT***START***LENGTH**REPEAT**JUSTIFY**FILL**NULL*DERIVED*USAGE**SYNTAX***GROUP-ITEM*********
CBS/CADET-1ST-COMPANY                        55       2     0       L                        O            GROUP
      SUBSCHEMAS: CO-C-ALL
      PROPONENT: S1      SOURCE: S1      COLLECTOR: S1      COLL-FREQ:          UPDATE PROPONENTS:  S1
      COMMENT: 001       PAGE: 001       DATE:              SECURITY:           PROPONENT: S1       AUTHOR:
                                      (2) INITIAL COLLECTOR:   S1            (5) COLLECTION DATES: *
                                      (3) RESPONSIBLE FOR UPDATE:   S1       (6) VALIDATION DATES: *
                                      DESCRIPTION:
                                      A GROUP ITEM WHICH INCLUDES THE FOLLOWING 2 DATA ELEMENTS
                                      COLLECTION METHOD:
                                      NONE
```

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 **SYNONYM/LONG-NAME***************IDENT***START***LENGTH**REPEAT**JUSTIFY**FILL**NULL*DERIVED*USAGE**SYNTAX***COBOL-PICTURE******
CBT/CADET-1ST-COMP                                  55        1      0        L                        O            VALSPEC  X.
        SUBSCHEMAS: CO-C-ALL
        PROPONENT: S1        SOURCE: S1        COLLECTOR: S1        COLL-FREQ:             UPDATE PROPONENTS:  S1
        COMMENT: 001         PAGE: 001         DATE:                SECURITY:              PROPONENT: S1       AUTHOR:
                                            (2) INITIAL COLLECTOR: S1                    (5) COLLECTION DATES: *
                                            (3) RESPONSIBLE FOR UPDATE: S1               (6) VALIDATION DATES: *
                                            DESCRIPTION:
                                            THE FIRST PERMANENT COMPANY A CADET WAS ASSIGNED.
                                            COLLECTION METHOD:
                                            NONE

        VALSPEC LEGAL VALUES:
        A     B     C     D     E     F     G     H     I     Z
 **SYNONYM/LONG-NAME***************IDENT***START***LENGTH**REPEAT**JUSTIFY**FILL**NULL*DERIVED*USAGE**SYNTAX***MAX VALUE**MIN VALUE
CBU/CADET-1ST-REGT                                  56        1      0        L                        O            RANGE    4          1
        SUBSCHEMAS: CO-C-ALL
        PROPONENT: S1        SOURCE: S1        COLLECTOR: S1        COLL-FREQ:             UPDATE PROPONENTS:  S1
        COMMENT: 001         PAGE: 001         DATE:                SECURITY:              PROPONENT: S1       AUTHOR:
                                            (2) INITIAL COLLECTOR: S1                    (5) COLLECTION DATES: *
                                            (3) RESPONSIBLE FOR UPDATE: S1               (6) VALIDATION DATES: *
                                            DESCRIPTION:
                                            THE FIRST PERMANENT REGIMENT A CADET WAS ASSIGNED.
                                            RANGE IS 1 THRU 4
                                            COLLECTION METHOD:
                                            NONE
 **SYNONYM/LONG-NAME***************IDENT***START***LENGTH**REPEAT**JUSTIFY**FILL**NULL*DERIVED*USAGE**SYNTAX***GROUP-ITEM*********
CBV/CADET-2ND-COMPANY                               57        2      0        L                        O            GROUP
        SUBSCHEMAS: CO-C-ALL
        PROPONENT: S1        SOURCE: S1        COLLECTOR: S1        COLL-FREQ:             UPDATE PROPONENTS:  S1
        COMMENT: 001         PAGE: 001         DATE:                SECURITY:              PROPONENT: S1       AUTHOR:
                                            (2) INITIAL COLLECTOR: S1                    (5) COLLECTION DATES: *
                                            (3) RESPONSIBLE FOR UPDATE: S1               (6) VALIDATION DATES: *
                                            DESCRIPTION:
                                            A GROUP ITEM WHICH INCLUDES THE FOLLOWING 2 DATA ELEMENTS.
                                            COLLECTION METHOD:
                                            NONE

 **SYNONYM/LONG-NAME***************IDENT***START***LENGTH**REPEAT**JUSTIFY**FILL**NULL*DERIVED*USAGE**SYNTAX***COBOL-PICTURE******
CBW/CADET-2ND-COMP                                  57        1      0        L                        O            VALSPEC  X.
        SUBSCHEMAS: CO-C-ALL
        PROPONENT: S1        SOURCE: S1        COLLECTOR: S1        COLL-FREQ:             UPDATE PROPONENTS:  S1
        COMMENT: 001         PAGE: 001         DATE:                SECURITY:              PROPONENT: S1       AUTHOR:
                                            (2) INITIAL COLLECTOR: S1                    (5) COLLECTION DATES: *
                                            (3) RESPONSIBLE FOR UPDATE: S1               (6) VALIDATION DATES: *
                                            DESCRIPTION:
                                            THE SECOND PERMANENT COMPANY A CADET WAS ASSIGNED.
                                            COLLECTION METHOD:
                                            NONE

        VALSPEC LEGAL VALUES:
              B     C     D     F     F     G     H     I     Z     A
 **SYNONYM/LONG-NAME***************IDENT***START***LENGTH**REPEAT**JUSTIFY**FILL**NULL*DERIVED*USAGE**SYNTAX***MAX VALUE**MIN VALUE
CBX/CADET-2ND-REGT                                  58        1      0        L                        O            RANGE    4          1
        SUBSCHEMAS: CO-C-ALL
        PROPONENT: S1       SOURCE: S1       COLLECTOR: S1       COLL-FREQ:          UPDATE PROPONENTS:  S1
        COMMENT: 001        PAGE: 001        DATE:               SECURITY:           PROPONENT: S1       AUTHOR:
                                      .   (2) INITIAL COLLECTOR: S1              (5) COLLECTION DATES: *
                                          (3) RESPONSIBLE FOR UPDATE. S1         (6) VALIDATION DATES: *
                                          DESCRIPTION:
                                          THE SECOND PERMANENT REGIMENT A CADET WAS ASSIGNED.
                                          RANGE IS 1 THRU 4
                                          COLLECTION METHOD:
                                          NONE
  **SYNONYM/LONG-NAME**************IDENT***START***LENGTH**REPEAT**JUSTIFY**FILL**NULL*DERIVED*USAGE**SYNTAX***COBOL-PICTURE*******
CBY/CADET-RELIGION-CODE                        59        2     0       L                         O           VALSPEC  XX.
        SUBSCHEMAS: CO-C-ALL
        PROPONENT: S1       SOURCE: S1       COLLECTOR: S1       COLL-FREQ:          UPDATE PROPONENTS:  S1
        VALSPEC LEGAL VALUES:
               00     01     02     04     05     06     07     08     09     10     12     13     14     16     18     19     20     24     26
        32     34     36     38     40     41     44     45     46     47     48     49     50     53     55     56     57     58     60     62
        64     66     68     70     72     74     75     99     AA     AB     AC     AD     AE     AF     AG     AH     AJ     AK     AL     AM
        AO     BA     BB     BC     BD     BE     BF     BG     BH     BO     CA     CD     CE     CF     CG     CH     CI     CJ     DA     DB
        DC     DD     DE     DF     DG     DH     DJ     DL     DM     DN     DO     DP     DQ     DR     DS     DT     DU     DV     DW     DX
        DY     DZ     EA     ED     EH     EJ     EK     EL     EM     EN     EO     EP     GA     GB     GC     GD     JA     JB     JC     JD
        JE     JF     JG     JH     JJ     JK     JL     JM     JN     JO     JP     JQ     JR     JS     JT     JU     JW     JX     JY     LD
        LE     LF     LG     NB     NC     ND     NE     NF
                                                     *VALFUNC DECODED VALUES*
        00     NO PREFERENCE RECORDED                                     01     NO RELIGIOUS PREFERENCE
        02     SEVENTH DAY ADVENTISTS                                     04     ASSEMBLIES OF GOD
        05     GRACE GOSPEL FELLOWSHIP                                    06     AMERICAN BAPTIST CHURCHES
        07     INDEPENDENT BAPTIST BIBLE MISSION                          08     SOUTHERN BAPTIST CONVENTION
        09     NATIONAL ASSOCIATION OF FREE WILL BAPTISTS                 10     BAPTIST CHURCHES OTHER
        12     BRETHEN CHURCH                                             13     CHRISTIAN-NO DENOMINATIONAL PREFERENCE
        14     BUDDHISM                                                   16     CHRISTIAN SCIENCE (FIRST CHURCH OF CHRIST, SCIEN
        18     CHURCH OF CHRIST                                           19     CHURCH OF GOD IN CHRIST
        20     CHURCH OF GOD                                              24     CHRISTIAN CHURCH (DISCIPLES OF CHRIST)
        26     PROTESTANT EPISCOPAL CHURCH                                32     FRIENDS
        34     JEHOVAH'S WITNESSES                                        36     JEWISH
        38     CHURCH OF JESUS CHRIST OF LATTER DAY SAINTS (LDS           40     LUTHERAN CHURCHES
        41     LUTHERAN COUNCIL IN THE USA                                44     METHODIST CHURCHES
        45     EVANGELICAL CHURCH OF NORTH AMERICA                        46     EVANGELICAL COVENANT CH'      N AMERICA
        47     EVANGELICAL CHURCH ALLIANCE                                48     MUSLIM
        49     HINDU                                                      50     CHURCH OF THE NAZARENE
        53     EASTERN ORTHODOX CHURCHES                                  55     FULL GOSPEL PENTECOST       [illegible]IATION
        56     PENTECOSTAL CHURCHES                                       57     UNITED PENTECOSTAL CH       INTERNATIONAL
        58     PRESBYTERIAN CHURCHES                                      60     REFORMED CHURCHES
        62     ROMAN CATHOLIC CHURCH                                      64     SALVATION ARMY
        66     UNITARIAN UNIVERSALIST ASSOCIATION                         68     UNITED CHURCH OF CHRIST
        70     PROTESTANT-OTHER CHURCHES                                  72     PROTESTANT-NO DENOMINATIONAL PREFERENCES
        74     OTHER RELIGIONS                                            75     ATHEIST
        99     UNKNOWN                                                    AA     ASBURY BIBLE CHURCHES
        AB     BIBLE PROTESTANT CHURCH                                    AC     CONGREGATIONAL METHODIST CHURCH
        AD     EVANGELICAL METHODIST CHURCH OF AMERICA                    AE     FUNDAMENTAL METHODIST CHURCH, INC
        AF     INDEPENDENT CHURCHES AFFILIATED                            AG     INDEPENDENT FUNDAMENTAL BIBLE CHURCHES
        AH     TIOGA RIVER CHRISTIAN CONFERENCE                           AJ     UKRANIAN EVANGELICAL BAPTIST CONFERENCE
        AK     METHODIST PROTESTANT CHURCH                                AL     MILITANT FUNDAMENTAL BIBLE CHURCHES
        AM     UNITED CHRISTIAN CHURCH                                    AO     AMERICAN COUNCIL OF CHRISTIAN CHURCHES
        BA     ANGLICAN ORTHODOX CHURCH                                   BB     BAPTIST BIBLE FELLOWSHIP
        BC     BRETHEN IN CHRIST FELLOWSHIP                               BD     CHRISTIAN CRUSADE
        BE     INDEPENDENT BAPTIST CHURCHES                               BF     INDEPENDENT LUTHERAN CHURCH
        WI     WISCONSIN                                                        WV     WEST VIRGINIA
        WY     WYOMING
  **SYNONYM/LONG-NAME**************IDENT***START***LENGTH**REPEAT**JUSTIFY**FILL**NULL*DERIVED*USAGE**SYNTAX***COBOL-PICTURE******
CFE/CADET-HS-ZIPCODE                             82        9     0       L                   0             PIC       X(9).
        SUBSCHEMAS: CO-C-ALL
        PROPONENT: S1        SOURCE:          COLLECTOR: DAD     COLL-FREQ:          UPDATE PROPONENTS:  S1
        COMMENT: 001         PAGE: 001        DATE:              SECURITY:           PROPONENT: S1       AUTHOR:
                                           (2) INITIAL COLLECTOR: DAR (5) COLLECTION DATES: 07           *
                                           (3) RESPONSIBLE FOR UPDATE: S-1       (6) VALIDATION DATES: 08 *
                                           DESCRIPTION:                INDIVIDUAL CADET
                                           THE POST OFFICE CODE FOR THE AREA IN WHICH THE HIGH SCHOOL     *
                                           THE CADET GRADUATED FROM IS LOCATED.
                                           COLLECTION METHOD:
                                           COLLECTED BY OIR FOR INPUT TO DATA BASE

  **SYNONYM/LONG-NAME**************IDENT***START***LENGTH**REPEAT**JUSTIFY**FILL**NULL*DERIVED*USAGE**SYNTAX***MAX VALUE**MIN VALUE
CFF/CADET-HS-RANK-IN-CLASS                       91        4     0       R             0     0             RANGE   0000009999 0000000001
        SUBSCHEMAS: CO-C-ALL
        PROPONENT: ORD       SOURCE: DAD      COLLECTOR: DAD     COLL-FREQ:          UPDATE PROPONENTS:  DAD
        COMMENT: 001         PAGE: 001        DATE:              SECURITY:           PROPONENT: ORD      AUTHOR:
                                           (2) INITIAL COLLECTOR: DAR (5) COLLECTION DATES: 07
                                           (3) RESPONSIBLE FOR UPDATE: DAR (6) VALIDATION DATES: 08
                                           DESCRIPTION:                INDIVIDUAL CADET
                                           THE CADETS ACADEMIC STANDING IN HIS HIGH SCHOOL GRADUATING     *
                                           CLASS.
                                           RANGE 001-999
                                           COLLECTION METHOD:
                                           INITIALIZED FROM THE CANDIDATE DATA BASE ELEMENT "AHC"
  **SYNONYM/LONG-NAME**************IDENT***START***LENGTH**REPEAT**JUSTIFY**FILL**NULL*DERIVED*USAGE**SYNTAX***COBOL-PICTURE******
CFG/CADET-HS-NBR-IN-CLASS                        95        4     0       R             0     0             PIC       9(4).
        SUBSCHEMAS: CO-C-ALL
        PROPONENT: ORD       SOURCE: DAD      COLLECTOR: DAD     COLL-FREQ:          UPDATE PROPONENTS:  DAD
        COMMENT: 001         PAGE: 001        DATE:              SECURITY:           PROPONENT: ORD      AUTHOR:
                                           (2) INITIAL COLLECTOR: DAR (5) COLLECTION DATES: 07
                                           (3) RESPONSIBLE FOR UPDATE: DAR (6) VALIDATION DATES: 08
                                           DESCRIPTION:                INDIVIDUAL CADET
                                           THE PERSONNEL STRENGTH OF THE CADETS HIGH SCHOOL GRADUATION    *
                                           CLASS.                                                         *
                                           COLLECTION METHOD:                                             *
                                           DATA IS EXTRACTED FROM DAR'S PCMF FILE. ALL DATA ON PCMF FILE  *
                                           IS HAND-VALIDATED BY DAR BEFORE SENDING TO CSD. 10% OF ALL     *
                                           PLEBE CLASS RECORDS SENT TO DAR IN AUGUST FOR RE-VALIDATION.   *
                                           COLLECTION METHOD:                                             *
                                           INITIALIZED FROM THE CANDIDATE DATA BASE ELEMENT "AHD"

  **SYNONYM/LONG-NAME**************IDENT***START***LENGTH**REPEAT**JUSTIFY**FILL**NULL*DERIVED*USAGE**SYNTAX***MAX VALUE**MIN VALUE
CFH/CADET-HS-RANK-CONVERT-NBR                    99        2     0       R             0     0             RANGE   0000000080 0000000020
        SUBSCHEMAS: CO-C-ALL
        PROPONENT: ORD       SOURCE: DAD      COLLECTOR: DAD     COLL-FREQ:          UPDATE PROPONENTS:  DAD
        COMMENT: 001         PAGE: 001        DATE:              SECURITY:           PROPONENT: ORD      AUTHOR:
                                           (2) INITIAL COLLECTOR: DAR (5) COLLECTION DATES: 07
                                           (3) RESPONSIBLE FOR UPDATE: DAR (6) VALIDATION DATES: 08
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                                                      DESCRIPTION:            INDIVIDUAL CADET
                                                      THE CADETS CLASS RANK IN HIS HIGH SCHOOL GRADUATING CLASS,     *
                                                      WEIGHTED AGAINST THE NUMBER IN THE CLASS AND CONVERTED         *
                                                      TO A 20-80 SCALE.                                              *
                                                      RANGE: 20 - 80.
                                                      COLLECTION METHOD:
                                                      INITIALIZED FROM THE CANDIDATE DATA BASE ELEMENT "APE"
                                                                                                                     *

  **SYNONYM/LONG-NAME**************IDENT***START***LENGTH**REPEAT**JUSTIFY**FILL**NULL*DERIVED*USAGE**SYNTAX***COBOL-PICTURE******
CFI/CADET-HS-OF-INTEREST                     101        1     0      L                   O          PIC      X.
        SUBSCHEMAS: CO-C-ALL
        PROPONENT: DAD     SOURCE:        COLLECTOR: DAD     COLL-FREQ:          UPDATE PROPONENTS:  DAD
        COMMENT: 001       PAGE: 001      DATE:              SECURITY:           PROPONENT: DAD      AUTHOR:
                                      (2) INITIAL COLLECTOR:                    (5) COLLECTION DATES:
                                      (3) RESPONSIBLE FOR UPDATE:               (6) VALIDATION DATES:
                                      DESCRIPTION:
                                      A FLAG TO INDICATE IF A CADET ATTENDED A HIGH SCHOOL OR        *
                                      PREP SCHOOL OF SPECIAL INTEREST TO ADMISSIONS.                 *
                                      COLLECTION METHOD:

  **SYNONYM/LONG-NAME**************IDENT***START***LENGTH**REPEAT**JUSTIFY**FILL**NULL*DERIVED*USAGE**SYNTAX***COBOL-PICTURE******
CFJ/CADET-HS-ETS-NBR                         102        6     0      L                   O          PIC      X(6).
        SUBSCHEMAS: CO-C-ALL
        PROPONENT: DAD     SOURCE:        COLLECTOR: DAD     COLL-FREQ:          UPDATE PROPONENTS:  DAD
        COMMENT: 001       PAGE: 001      DATE:              SECURITY:           PROPONENT: DAD      AUTHOR:
                                      (2) INITIAL COLLECTOR:                    (5) COLLECTION DATES:
                                      (3) RESPONSIBLE FOR UPDATE:               (6) VALIDATION DATES:
                                      DESCRIPTION:
                                      THE PRINCETON EDUCATIONAL TESTING SERVICE NUMBER ASSIGNED      *
                                      TO THE CADET'S HIGH SCHOOL.
                                      COLLECTION METHOD:

  **SYNONYM/LONG-NAME**************IDENT***START***LENGTH**REPEAT**JUSTIFY**FILL**NULL*DERIVED*USAGE**SYNTAX***COBOL-PICTURE******
CFK/BOYS-STATE-DELEGATE-STATE                108        2     0      L                   O          VALSPEC  XX.
        SUBSCHEMAS: CO-C-ALL
        PROPONENT: DAD     SOURCE:        COLLECTOR: DAD     COLL-FREQ:          UPDATE PROPONENTS;
        COMMENT: 001       PAGE: 001      DATE:              SECURITY:           PROPONENT: DAD      AUTHOR:
                                      (2) INITIAL COLLECTOR: DAR (5) COLLECTION DATES: 07
                                      (3) RESPONSIBLE FOR UPDATE: NONE (6) VALIDATION DATES:         *
                                                                       NOT VALIDATED                 *
                                      DESCRIPTION:
                                      THE TWO POSITION CODE ASSIGNED TO THE STATE FROM               *
                                      WHICH THE CADET WAS A BOYS STATE DELEGATE.                     *
                                      SEE SYN CIN "CADET-BIRTH-STATE" FOR CODES.                     *
                                      COLLECTION METHOD:                                             *
                                      DATA IS COLLECTED BY DAR ON INITIAL COLLECTION FORMS           *
                                      DURING NEW-CADET ARRIVAL WEEK.                                 *
                                                                                                     *

        VALSPEC LEGAL VALUES:
             AL    AR    AZ    CA    CO    CT    DC    DE    FL    GA    GU    HI    IA    ID    IL    IN    KS    KY    LA
        MA   MD    ME    MI    MN    MO    MS    MT    NC    ND    NE    NH    NJ    NM    NV    NY    OH    OK    OR    OS
        PA   PR    RI    SC    SD    TN    TX    UT    VA    VI    VT    WA    WI    WV    WY    AK
```

```
                                         THE CADETS MATH APTITUDE SCORE ON THE SCHOLASTIC APTITUDE TEST
                                         RANGE IS 200 THRU 800
                                         COLLECTION METHOD:
                                         INITIALIZED FROM THE CANDIDATE DATA BASE ELEMENT "AIC"

 **SYNONYM/LONG-NAME***************IDENT***START***LENGTH**REPEAT**JUSTIFY**FILL**NULL*DERIVED*USAGE**SYNTAX***MAX VALUE**MIN VALUE
CGD/TEST-CEER                                123       4      0      R               0      0            RANGE   0000000800 0000000200
      SUBSCHEMAS: CO-C-ALL
      PROPONENT: ORD      SOURCE:            COLLECTOR: DAD     COLL-FREQ:         UPDATE PROPONENTS:  ORD
      COMMENT: 001        PAGE: 001          DATE:              SECURITY:          PROPONENT: ORD     AUTHOR:
                                         (2) INITIAL COLLECTOR: DAR (5) COLLECTION DATES: 07
                                         (3) RESPONSIBLE FOR UPDATE: OPSD (6) VALIDATION DATES: 08
                                         DESCRIPTION:             INDIVIDUAL CADET
                                         THE CEER SCORE CALCULATED USING AMERICAN COLLEGE TEST (ACT)
                                         SCORES AS INPUT, WITH VARIOUS WEIGHTS ASSIGNED TO EACH ACT
                                         COMPONENT.
                                         THIS IS CEER OR ACEER VALUE DEPENDING ON ENTRANCE-CEER-TYPE
                                         FOR THE EXACT FORMULA CURRENTLY IN USE, CONSULT THE DOCUMENT
                                         "ACADEMIC BOARD DIRECTIVE ON THE QUALIFICATION OF CANDIDATES
                                         FOR ADMISSION TO USMA".
                                         RANGE IS 200 THRU 800
                                         COLLECTION METHOD:
                                         INITIALIZED FROM THE CANDIDATE DATA BASE ELEMENT "AGE"

 **SYNONYM/LONG-NAME***************IDENT***START***LENGTH**REPEAT**JUSTIFY**FILL**NULL*DERIVED*USAGE**SYNTAX***COBOL-PICTURE*******
CGE/TEST-CEER-TYPE                           127       1      0      L                      0            VALSPEC  X.
      SUBSCHEMAS: CO-C-ALL
      PROPONENT: ORD      SOURCE: DAD        COLLECTOR: DAD     COLL-FREQ:         UPDATE PROPONENTS:  DAD
      COMMENT: 001        PAGE: 001          DATE:              SECURITY:          PROPONENT: ORD     AUTHOR:
                                         (2) INITIAL COLLECTOR: DAR (5) COLLECTION DATES: 07
                                         (3) RESPONSIBLE FOR UPDATE: DAR (6) VALIDATION DATES: 08
                                         DESCRIPTION:             INDIVIDUAL CADET
                                         THE ONE POSITION CODE DESIGNATING THE BASIS ON WHICH CEER OR
                                         ACEER IS USED FOR ADMISSION.                                      *
                                           A = CEER AND ACEER COMPLETE, ACEER IS HIGHER
                                           B = ACEER INCOMPLETE, CEER COMPLETE, CEER USED                  *
                                           C = CEER AND ACEER COMPLETE, ACFER IS LOWER                     *
                                           D = CEER INCOMPLETE, ACEER COMPLETE, ACEER IS USED              *
                                           E = INCOMPLETE ACEER AND CEER, CEER ESTIMATED ON PSAT           *
                                           F = RAW SCORE INCOMPLETE, HAS HIGH SCHOOL RANK ONLY             *
                                         COLLECTION METHOD:
                                         PCMF FILE. SEE "CADET-HS-NUMBER-IN-CLASS".


      VALSPEC LEGAL VALUES:
      A     B     C     D     E     F
                                                    *VALFUNC DECODED VALUES*
      A     CEER AND ACEER COMPLETE, ACEER IS HIGHER                B     ACEER INCOMPLETE, CEER COMPLETE, CEER USED
      C     CEER AND ACEER COMPLETE, ACEER LOWER                    D     CEER INCOMPLETE, ACEER COMPLETE, ACEER USED
      E     INCOMPLETE ACEER AND CEER,CEER ESTIMATED ON PSAT        F     RAW SCORE INCOMPLETE, HAS HIGH SCHOOL RANK ONLY
 **SYNONYM/LONG-NAME***************IDENT***START***LENGTH**REPEAT**JUSTIFY**FILL**NULL*DERIVED*USAGE**SYNTAX***MAX VALUE**MIN VALUE
CGF/TEST-LEADERSHIP-POTENTIAL                128       3      0      R               0      0            RANGE   0000000780 0000000147
      SUBSCHEMAS: CO-C-ALL
```

```
        PROPONENT: ORD       SOURCE: DAD      COLLECTOR: DAD     COLL-FREQ:         UPDATE PROPONENTS:  ORD
        COMMENT: 001         PAGE: 001        DATE:              SECURITY:          PROPONENT: ORD     AUTHOR:
                                             (2) INITIAL COLLECTOR: DAR (5) COLLECTION DATES: 07
                                             (3) RESPONSIBLE FOR UPDATE: OPSD (6) VALIDATION DATES: 08
                                             DESCRIPTION:            INDIVIDUAL CADET
                                             THE LEADERSHIP POTENTIAL SCORE IS THE ARITHMETICAL MEAN       *
                                             OF THREE SCORES. THOSE IN FACULTY APPRAISAL.                  *
                                             ATHLETIC ACTIVITY AND CO-CURRICULAR ACTIVITY.                 *
                                             RANGE: 147-780                                                *
                                             COLLECTION METHOD:                                            *
                                             INITIALIZED FROM THE CANDIDATE DATA BASE ELEMENT "AGG"
                                                                                                           *

  **SYNONYM/LONG-NAME**************IDENT***START***LENGTH**REPEAT**JUSTIFY**FILL**NULL*DERIVED*USAGE**SYNTAX***MAX VALUE**MIN VALUE
CGG/TEST-PAE                                   131       3      0       R            0       0            RANGE    0000000300 0000000200
        SUBSCHEMAS: CO-C-ALL
        PROPONENT: ORD       SOURCE: DAD      COLLECTOR: DAD     COLL-FREQ:         UPDATE PROPONENTS:  ORD
        COMMENT: 001         PAGE: 001        DATE:              SECURITY:          PROPONENT: ORD     AUTHOR:
                                             (2) INITIAL COLLECTOR: DAR          (5) COLLECTION DATES: 07
                                             (3) RESPONSIBLE FOR UPDATE: OPSD    (6) VALIDATION DATES: 08
                                             DESCRIPTION:            INDIVIDUAL CADET
                                             THE INDIVIDUALS SCORE ON THE USMA EXAMINATION IN PHYSICAL
                                             APTITUDE EXAM (PAE) SCORE IS COMPUTED AS FOLLOWS:
                                             1. RAW SCORE TO BE CONVERTED BY COMPARING AGAINST
                                                TOTAL CANDIDATE MEAN AND STANDARD DEVIATION.
                                             2. MEAN OF FOUR EVENT SCORES
                                             3. CONVERT TO RANGE OF 200-800 BY COMPARISON AGAINST
                                                TOTAL CANDIDATE MEAN OF 500 AND A VARIATION OF
                                                100 * STANDARD DEVIATION.
                                                RANGE IS 200 THRU 800
                                             COLLECTION METHOD:
                                             INITIALIZED FROM THE CANDIDATE DATA BASE ELEMENT "AGF".


  **SYNONYM/LONG-NAME**************IDENT***START***LENGTH**REPEAT**JUSTIFY**FILL**NULL*DERIVED*USAGE**SYNTAX***COBOL-PICTURE*******
CGH/TEST-WHOLE-CANDIDATE-SCORE                 134       4      0       R            0       0            PIC        9(4).
        SUBSCHEMAS: CO-C-ALL
        PROPONENT: ORD       SOURCE:          COLLECTOR: DAD     COLL-FREQ:         UPDATE PROPONENTS:  ORD
        COMMENT: 001         PAGE: 001        DATE:              SECURITY:          PROPONENT: ORD     AUTHOR:
                                             (2) INITIAL COLLECTOR: DAR (5) COLLECTION DATES: 07
                                             (3) RESPONSIBLE FOR UPDATE: OPSD (6) VALIDATION DATES: 08
                                             DESCRIPTION:            INDIVIDUAL CADET
                                             THE WEIGHTED MEAN OF CEER, LEADERSHIP POTENTIAL,              *
                                             AND PAE SCORES . FOR THE EXACT FORMULA CURRENTLY IN USE,      *
                                             CONSULT THE DOCUMENT "ACADEMIC BOARD DIRECTIVE ON THE         *
                                             QUALIFICATION OF CANDIDATES FOR ADMISSION TO USMA".           *
                                             COLLECTION METHOD:
                                             INITIALIZED FROM THE CANDIDATE DATA BASE ELEMENT "AGB"        *
                                                                                                           *
                                                                                                           *

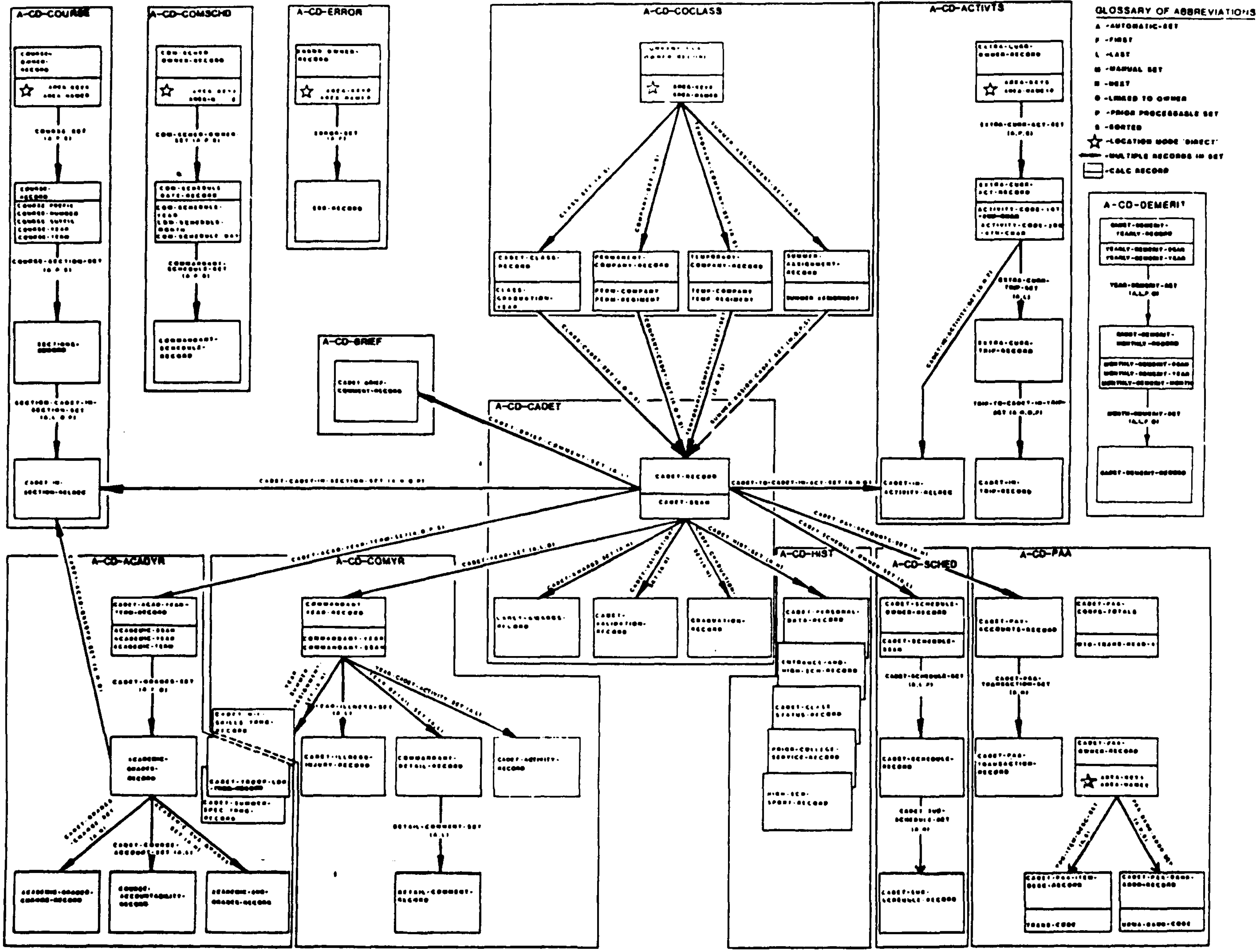
  **SYNONYM/LONG-NAME**************IDENT***START***LENGTH**REPEAT**JUSTIFY**FILL**NULL*DERIVED*USAGE**SYNTAX***MAX VALUE**MIN VALUE
CGI/TEST-ACT-MATH-SCORE                        138       2      0       R            0       0            RANGE    0000000036 0000000001
        SUBSCHEMAS: CO-C-ALL
```

APPENDIX B

CURRENT SCHEMAS

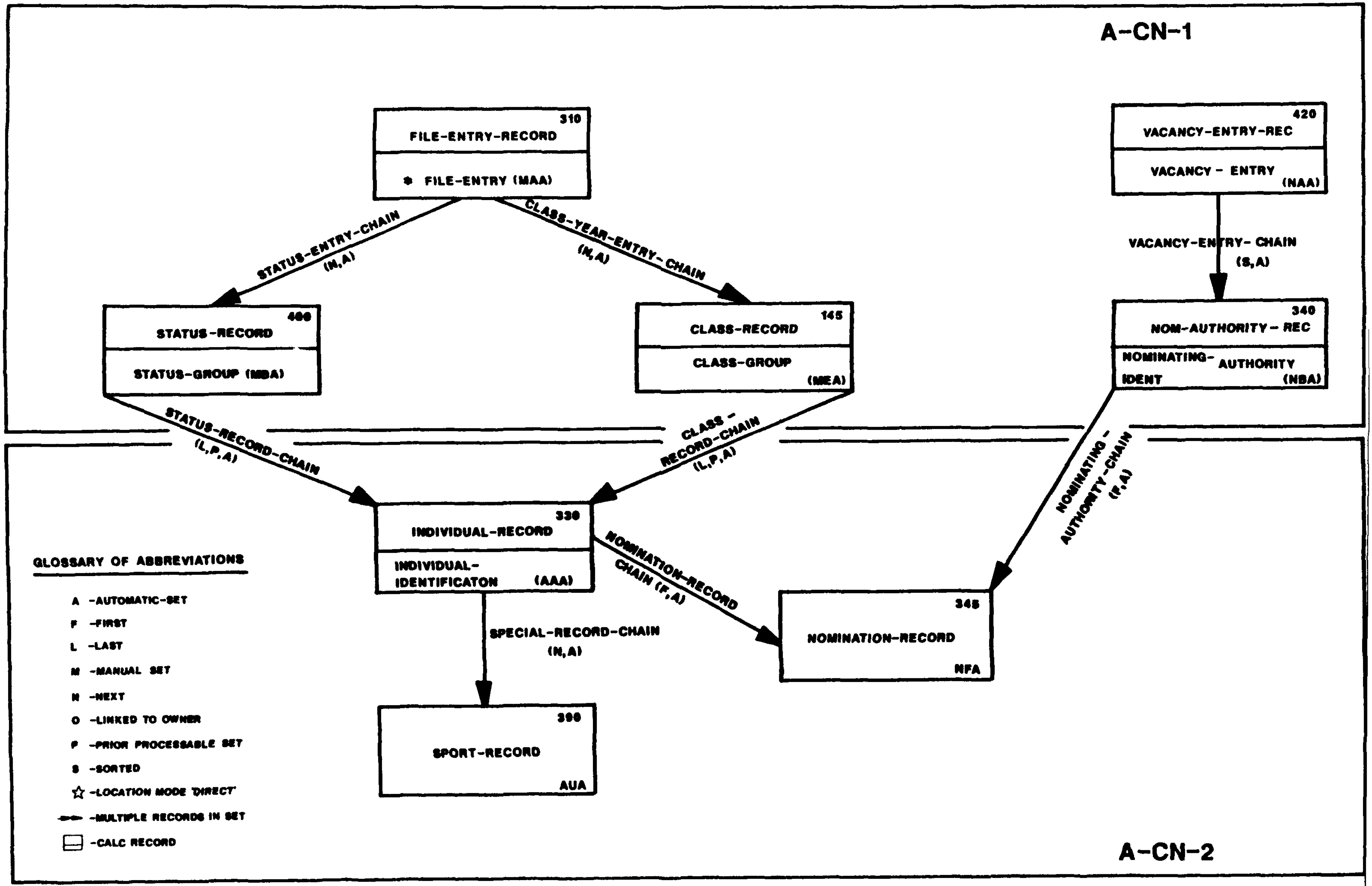
This appendix contains the four schemas from West Point's existing network database. The four schemas represent: the Cadet Information Data Base (CIDB), the Candidate and Nominational Authority Data Base, the Field Force Data Base, and the Scheduling Data Base. These schemas were combined into one large schema located at Figure 4.1, in Chapter IV. This new schema contains the same information, with duplicate data removed, representing one large relational application.

CADET INFORMATION D.. A BASE "CIDB"

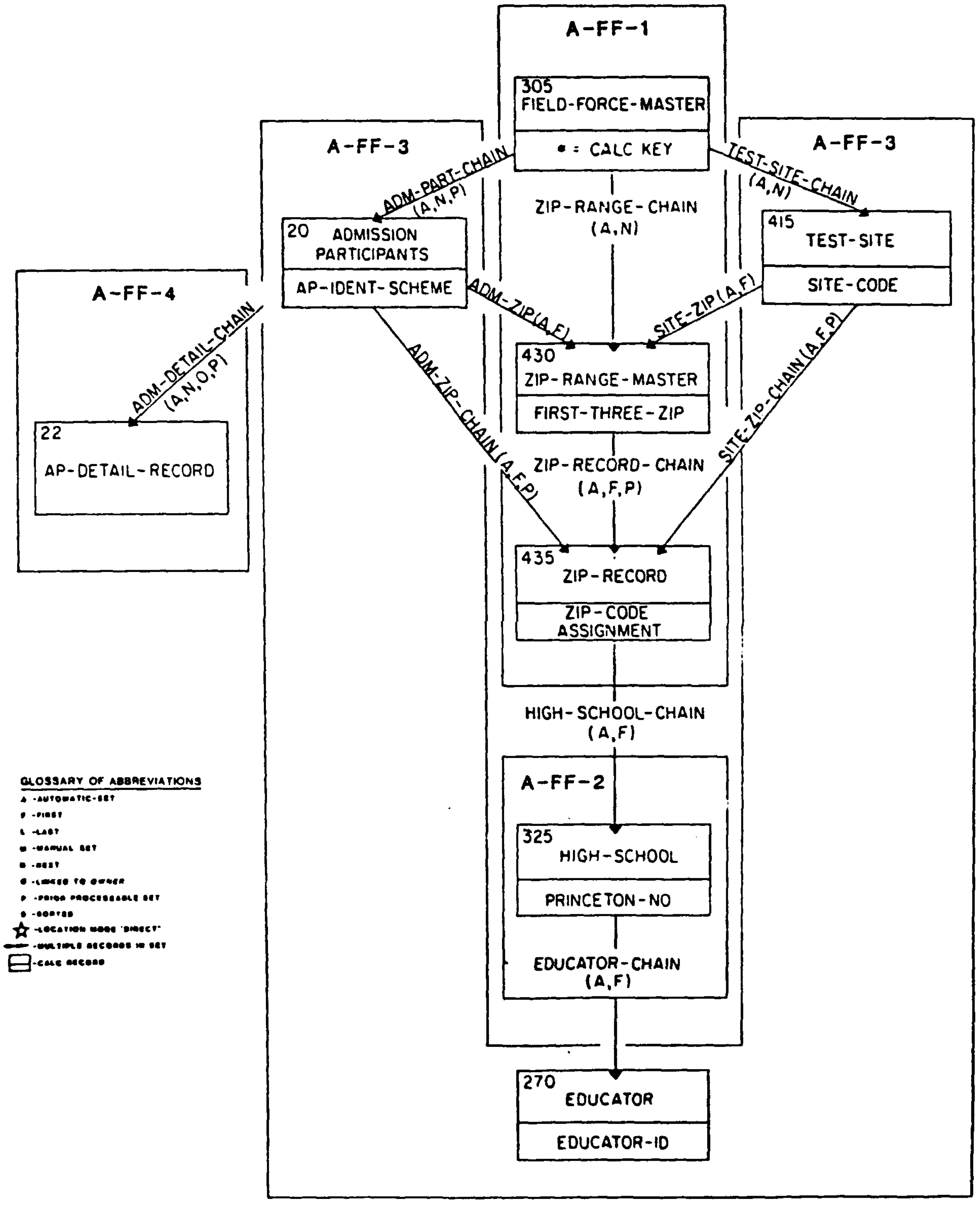


CADET-PTH041

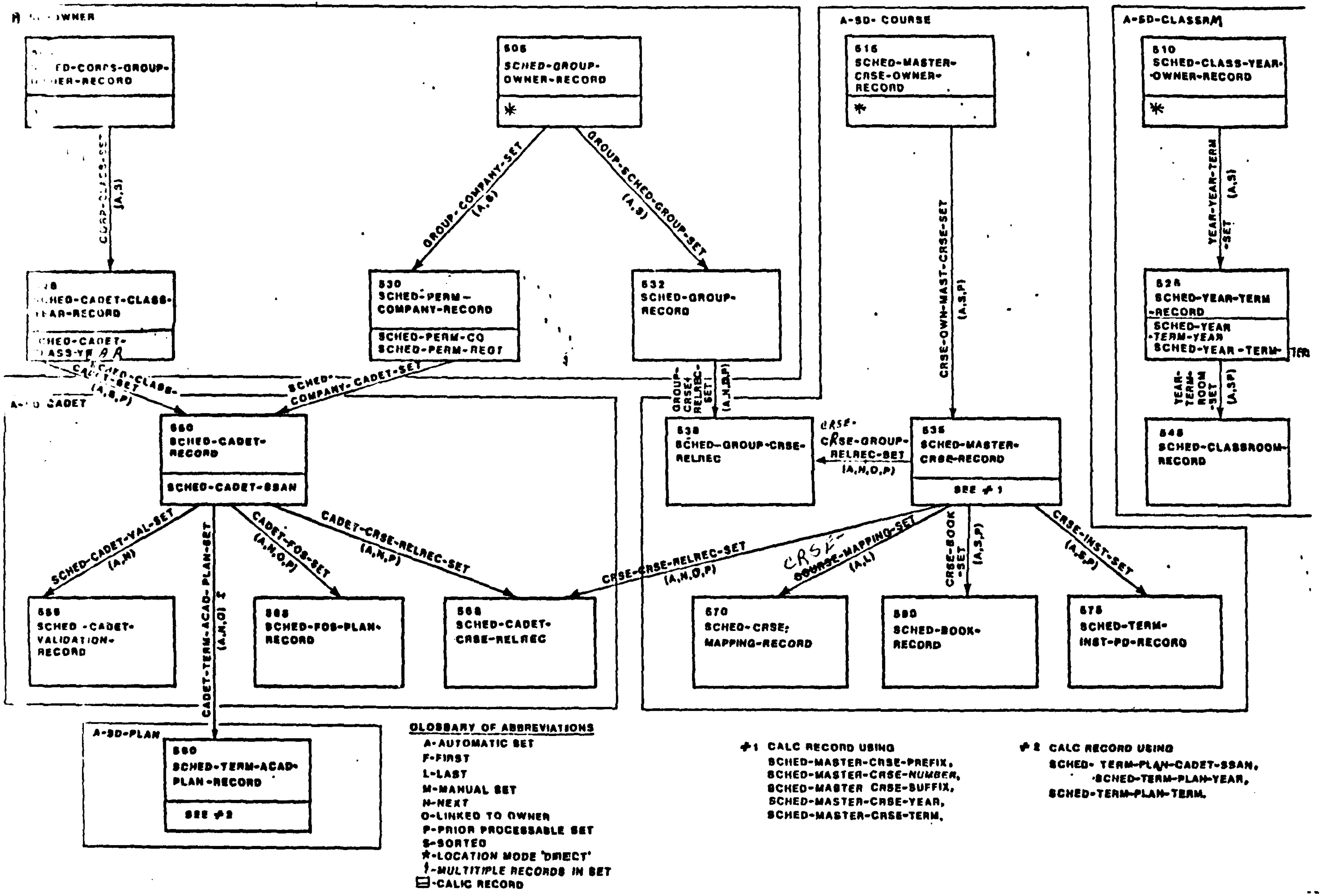
CANDIDATE AND NOMINATIONAL AUTHORITY DATA BASE



FIELD FORCE DATA BASE



SCHEDULING DATABASE



APPENDIX C

FUNCTIONAL DEPENDENCIES

COMMANDANT'S OFFICE --

AWARD_CODE --> Award_Name

CADET_ACT_CODE_1ST_2ND_CHAR,
CADET_ACT_CODE_3RD_4TH_CHAR --> Activity_Title_In_Season_Flag, Activity_Type, Activity_Code_OIC_Title, Activity_Code_OIC_Rank, Activity_Code_OIC_Name, Activity_Excusal_Code, Activity_A_Squad_Auth, Activity_B_Squad_Auth, Activity_C_Squad_Auth, Activity_CS_OFF_Season_Auth, Activity_Code_Coach_Title, Activity_Code_Coach_Rank, Activity_Code_Coach_Name

CADET_ACT_CODE_1ST_2ND_CHAR,
CADET_ACT_CODE_3RD_4TH_CHAR, TRIP_ID --> Trip_Address_Name, Trip_Address_City, Trip_Address_State, Trip_Address_Zipcode, Trip_Address_Phone, Trip_OIC_Title, Trip_OIC_Rank, Trip_OIC_Name, Trip_CIC, Trip_Departure_Year, Trip_Departure_Month, Trip_Departure_Day, Trip_Departure_Time, Trip_Return_Year, Trip_Return_Month, Trip_Return_Day, Trip_Return_Time, Trip_Uniform,

(CADET_ACT_CODE_1ST_2ND_CHAR,
CADET_ACT_CODE_3RD_4TH_CHAR, TRIP_ID -->)
Trip_Assembly_Point, Trip_Trans_Type, Trip_Half_Days_Used,
Trip_Study_Periods_Used

EVENT_NAME, LOC_CODE --> Begin_DTG, End_DTG

LOC_CODE --> Loc_Name, OCONUS_Flag

LOC_CODE_TO, LOC_CODE_FROM --> Miles

PRIOR_COLLEGE_NAME --> Prior_College_City, Prior_College_State,
Prior_College_Zipccde

SSN --> Class_Year, Cadet_Alpha_Number, Cadet_Short_Name_Firsthalf,
Cadet_Short_Name_Second_Half, Separation_Flag, Turn_Come_Back_Flag,
Deferred_Turnbk_Flag, Term_End_Sep_Flag, Permanent_Company,
Permanent_Regiment, First_Company, First_Regiment, Second_Company,
Second_Regiment, Crse_Prereq_Check, Crse_Graduation_Check,
Field_Of_Study_Check, Field_Of_Study, Area_Identifier,
Field_Identifier, Sub_Field_Identifier, Assign_Eval_Flag,
Assign_Airborne_Flag, Assign_Ranger_Flag, Assign_Med_Qual_Code,
Assign_APFT_Score, Assign_Run_Time, Assign_Chinups,
Con_Or_Walk_Flag, Demerits_Conduct_Flag, Academic_Advisor_Rank,
Academic_Advisor_Name, Academic_Advisor_Dept, Grade_Report_Flag,

(SSN ->)

Sponsor_Rank, Sponsor_Name, Sponsor_Dept,
Act_Participation_Category, Plebe_Parent_Weekend_Pos_Held
Cadet_Long_Name, Emergency_Phone_Num, State_Of_Domicile,
City_Of_Domicile, Birthdate_Year, Birthdate_Month, Birthdate_Day,
Birth_City, Birth_State, Ethnic_Code, Blood_Type, Current_Height,
Current_Weight, Pullups, Sex, Religion_Code, Race_Code
Graduation_Year, Graduation_Month, Graduation_Day,
Graduation_Status_Flag, Commission_Year, Commission_Month,
Commission_Day, Commission_Flag, Basic_Branch, Detail_Branch,
GRE_Verbal, GRE_Analytical, GRE_Quantitative,
Prep_School_Name_Indic, Service_Component, Regular_Or_Res_Indic,
Service_Months, Military_MOS, Current_Active_Duty_Indic,
Citations_Received_Indic, Wounds_Received_Indic
Entrance_Year, Entrance_Month, Entrance_Day, Entrance_District,
Entrance_Nomination, Entrance_Height, Entrance_Weight,
Entrance_Pullups, Entrance_Swim_Class, Entrance_Recruit_Program,
Entrance_Run1, Entrance_Run2, Test_English_Expression,
Test_English_Predictor_Rank, Test_TSWE_Score,
Test_Nelson_Den_Vocabulary,
Test_Nelson_Den_Vocabulary_Per, Test_Nelson_Den_Comprehend,
Test_Nelson_Den_Comprehend_Per, Test_Nelson_Den_Reading_Rate,
Test_Nelson_Den_Reading_Per, Test_Nelson_Den_Vocab_Comp_Per,
ACT_SAT_Indic

SSN, AWARD_YEAR, AWARD_MONTH, AWARD_DAY,
AWARD_OCCUR_NUM --> Award_Code

SSN, CADET_ACT_CODE_1ST_2ND_CHAR,
CADET_ACT_CODE_3RD_4TH_CODE, ACTIVITY_START_YEAR,
ACTIVITY_START_MONTH, ACTIVITY_START_DAY -->
Cadet_Level_Of_Participation, Cadet_Activity_Type,
Cadet_Activity_Award, Cadet_Days_In_Activity

SSN, DEMERIT_YEAR --> Yearly_Prob_End_Year, Yearly_Prob_End_Month,
Yearly_Prob_End_Day, Yearly_Special_Penalty_Tour,
Yearly_Special_Demerits

SSN, DEMERIT_YEAR, DEMERIT_MONTH --> Monthly_Demerits_Allowed,
Monthly_Special_Penalty_Tour, Monthly_Special_Demerits

SSN, DEMERIT_YEAR, DEMERIT_MONTH, DEMERIT_DAY,
CADET_OFFENSE_NUMBER --> Cadet_Offense_Code, Cadet_Demerits_Awd,
Cadet_Demerits_Area_Tours_Awd, Cadet_Demerits_Room_Tours_Awd,
Cadet_Demerits_Orig_Name, Cadet_Demerits_Orig_Rank,
Cadet_Demerits_Orig_Orgn, Offense_Rescind_Flag, Dem_Post_Year,
Dem_Post_Month, Dem_Post_Day, Dem_Post_Time,
Dem_Comment_Creation_Year, Dem_Comment_Creation_Month,
Dem_Comment_Creation_Day, Dem_Comment_Line1,
Dem_Comment_Line2, Dem_Comment_Line3, Dem_Comment_Line4,

(SSN, DEMERIT_YEAR, DEMERIT_MONTH, DEMERIT_DAY,
CADET_OFFENSE_NUMBER -->)
Dem_Comment_Line5, Dem_Comment_Line6,
Commanders_Recommendation, Leader_Dimension,
Leader_Dimension_Comment_Line, Incentive_A ,ard, Reduced_Privilege

SSN, DETAIL_YEAR, DETAIL_PERIOD --> Loc_Code, Detail_Assignment,
Detail_Position_Code, Detail_Battalion, Detail_Regiment, Detail_Company,
Detail_Platoon, Detail_Squad, Detail_Rank_Code, Detail_Sick_Calls,
Eff_Rep_Comp, Eff_Rpt_Regt, Eff_Rpt_Tac_Quartile,
Eff_Rpt_CC_Quartile, Eff_Rpt_PL_Quartile, Eff_Rpt_PSG_Quartile,
Eff_Rpt_1SG_Quartile, Eff_Rpt_Rating_Number,
Military_Dev_Index_Term, Military_Dev_Index_Cum,
Military_Dev_Index_Cum_OM, Summer_Leadership_Grade,
Detail_Development_Board, Detail_Conduct_Board

SSN, HONOR_BOARD_YEAR, HONOR_BOARD_MONTH,
HONOR_BOARD_DAY --> Honor_Board_Participation

SSN, ILLNESS_YEAR, ILLNESS_MONTH, ILLNESS_DAY, TIMEIN -->
Timeout, Type, Disposition, Excused_To_Date

SSN, INJURY_YEAR, INJURY_MONTH, INJURY_DAY, INJURY_OCCUR_NUM --> Injury_Activity_1st_2nd_Char, Injury_Activity_3rd_4th_Char, Injury_Body_Part_1st_2nd_Char, Injury_Body_Part_3rd_4th_Char, Nature

SSN, PARENT_NAME --> Parent_Title, Parent_Rank, Parent_Name, Parent_Street, Parent_City, Parent_State, Parent_Zipcode, Parent_Living, Parent_Occupation, Parent_Serv_Rank, Parent_Serv_Status, Parent_Serv_Component

SSN, PRIOR_COLLEGE_NAME --> Prior_College_Months

SSN, STATUS_OCCUR_NUM --> Class_Separated_From, Withdrawal_Year, Withdrawal_Month, Withdrawal_Day, Separation_Year, Separation_Month, Separation_Day, Disposition_Indic, Departure_Year, Departure_Month, Departure_Day, Separation_Indic, Turn_Come_Back_Year, Turn_Come_Back_Month, Turn_Come_Back_Day

DEAN'S OFFICE --

BOOK# --> Issue_Code, Title, Author, Unit_Price, Transaction_Date, Transaction_Code, Extended_Price, Unit_of_Issue, Books_On_Hand, Est_Del_Date, Qty_Requested, Location, Procure_Inst_No, Procure_Act

CLASSROOM# --> Building_Name, Capacity, Room_Type, Max_Cadets

CLASS_YEAR --> Graduation_Requirement, Term_Requirement

COURSE_PREFIX, COURSE_NUMBER, COURSE_SUFFIX, YEAR, TERM --> Course_Name, Credit_Hours, Lab_Period, Type_Course, Hour_Final, Dept_App, First_Year, First_Term, Min_Cadets, Cadet_Instr_Ratio, Instructor_Name, Prereq_Prefix, Prereq_Number, Prereq_Suffix, Type_Prereq

COURSE_PREFIX, COURSE_NUMBER, COURSE_SUFFIX, YEAR, TERM, HOUR, SECTION --> Number_Enrolled, Max_Marks, TEE_Max_Marks, TEE_Hour, Academic_Grades_Expand

FIELD_OF_STUDY --> Course_Prefix, Course_Number, Course_Suffix

SSN --> Individual_File_Status, Individual_Status_Elaboration,
Individual_Status_Authority, Individual_Status_Date,
Offer_of_Admission_Date, Status_Elaboration_Date,
Academic_Evaluation_Status, Academic_Quality_Zone,
Physical_Aptitude_Status, Physical_Aptitude_Quality_Zone,
Medical_Evaluation_Status, Medical_Quality_Zone,
Leadership_Evaluation_Status, Leadership_Quality_Zone,
Med_Waiver_Status, Name_Individual, First_Address_Line,
Second_Address_Line, Address_City, Address_State, Address_Zip_Code,
Telephone_Number, Recruit_Pgm_Code, Sex, Height, Weight,
Ethnic_Background, Race, Birth_Year, Birth_Month, Birth_Day,
State_of_Domicile, District_of_Residence, USMA_Geneology,
Parent_Academy, Sibling_Academy, Prior_Active_Duty,
Current_Active_Duty,Transcript_Grad_Year, Ent_Appointment_State,
Ent_Senator_or_District_No, Ent_Source_Sequence_No,
Ent_Nomination_Type, Number_of_Nominations,
Record_Source_of_Creation, Record_Creation_Date,
Record_Last_Update_Date, Whole_Candidate_Score,
College_Entrance_Exam_Rank, Academic_Supplement_Score, PAE_Score,
PAE_Score2, PAE_Score3, PAE_Source_Code, `
Leadership_Potential_Score, Qualified_Alternate_Score,
File_Evaluation_Score, CEER_Source, PAE_Adjustment_Score,
Qualified_Alt_Adjustment_Score, CEER_Adjustment_Score,
LPS_Adjustment_Score, Whole_Cand_Adjust_Score, Retention_Index,
College_Transcript_Flag, Prep_School_Name_Code, Percent_Onto_College,

(SSN -->)

ADM_Officer_Eval_Score, ADM_Committee_Eval_Score, Acad_Bd_Eval_Score, Work_Experience_Years, Work_Hours_Per_Week, Work_Experience_Type, Extracurric_Activities_Score, Athletic_Activities_Score, Faculty_Appraisal_Score, High_School_Class_Rank_Score, College_Board_Avg, Compensating_Evidence, LC_Score, Class_Rank_Readjustment, Class_Rnk_Readj_Reason, Prelimimary_SAT_Verbal, Preliminary_SAT_Math, Nominational_Assistance, USMA_Application_History, Prep_School_Entrance_Final, Prep_School_Recruit_Pop, Applicant_AO_Code, Applicant_State_Code, Applicant_Area_Code, Applicant_Position_Code, Applicant_Test_Site_Code, Physical_Aptitude_Exam_Type, Interview_on_File, Cand_Pers_Stmt, Employers_Evaluation, Act'vities_Rec_DD_1868, Pers_Data_Rec_DD_1867, School_Official_Eval_Count, Force_Summary_Sheet, HS_Transcript_Request, LOA_LOE_Code, Special_Letter_Two, DODMERB_Notification_Flag, WCS_Change_Flag, Birth_Certificate, Parent_Consent_Form, SOE_From_English, SOE_From_Counselor, SOE_From_Other, Academic_Status_Date, Physical_Aptitude_Status_Date, Medical_Status_Date, Leadership_Status_Date, Second_Step_Kit_Sent_Date, Date_5_413_And_5_480, Special_Letter_One_Date, Special_Letter_Two_Date, Address_Change_Flag, Special_Report_Code1, Special_Report_Code2, Special_Report_Code3, Special_Report_Code4, Special_Report_Code5, Special_Report_Code6

(SSN-->)

Cumulative_AOM, Cumulative_GOM, Cumulative_Acad_Percentile, Cumulative_Gen_Percentile, Cumulative_Acad_Credit_Hrs, Cumulative_Gen_Credit_Hrs, Cumulative_Acad_Quality_Pts, Cumulative_Acad_QPA, Cumulative_Gen_QPA, Cumulative_Gen_Quality_Pts, Final_Term_Flag, CQPA_Probation_Flag

SSN, ACADEMIC_YEAR --> Year_Summary_AOM, Year_Summary_GOM, Year_Summary_Acad_Percentile, Year_Summary_Gen_Percentile, Year_Summary_Acad_Quality_Pts, Year_Summary_Acad_Credit_Hrs, Year_Summary_Acad_QPA, Year_Summary_Gen_QPA, Year_Summary_Gen_Quality_Pts, Year_Summary_Gen _Credit_Hrs, Year_Summary_Disting_Cadet

SSN, ACADEMIC_YEAR, ACADEMIC_TERM --> Term_Academic_OM, Term_General_OM, Term_Academic_Percentile, Term_General_Percentile, Term_Academic_Quality_Pts, Term_Academic_Credit_Hrs, Term_Acad_QPA, Term_End_Graybk_Flag, Term_Gen_QPA, Term_Gen_Quality_Pts, Term_Gen_Credit_Hrs, Term_Deans_List, Deans_Graybk_Recomm_Code, TQPA_Probation_Flag, Year_Term_Active_Flag

SSN, COURSE_PREFIX, COURSE_NUMBER, COURSE_SUFFIX, YEAR, TERM, HOUR --> Cadet_Validation_Course_Desc,
Cadet_Validation_Course_Type, Course_Elective_Flag, Enrollment_Type, Cum_Marks, Average, Letter_Grade, Order_Of_Merit, TEE_Cum_Marks, TEE_Average, Reason, Course_Percentile, Grade_Per_Day, Grade_Per_Month, Grade_Per_Year

SSN, COURSE_PREFIX, COURSE_NUMBER, COURSE_SUFFIX, YEAR, TERM, HOUR, SECTION --> Absent_Year, Absent_Month,
Absent_Day, Absent_Status, Absent_Reason

SSN, YEAR, TERM --> Course_Prefix, Course_Number, Course_Suffix,
Overload, Waive_Prereq,Repeated, Dept_App

ADMISSIONS' OFFICE --

AO_CODE, AP_STATE, AP_AREA, AP_POSITION --> AP_SSN, Position_Flag, Organization_Code, Training_Code, Training_Year, Equip_Status_1, Equip_Status_2, Equip_Status_3, Equip_Status_4, Equip_Status_5, Spring_ADT, Fall_ADT, March_IDT, June_IDT, Dec_IDT, Special_Event_Code, Special_Event_Date, Special_Duty_Code, Remarks_First_Line, Remarks_Second_Line

AP_SSN --> AP_Name, AP_Title, First_Address_Line, Second_Address_Line, Third_Address_Line, Address_State, Zip_Code, Home_Phone_Area_Code, Home_Phone_Number, Business_Area_Code, Business_Phone_Number, Business_Phone_Ext, Autovon_Number, Autovon_Extension, Branch_of_Service, Military_MOS, Military_Rank, Military_Status, AP_Month_Joined, AP_Year_Joined, USMA_Class_Year

EDUCATOR_ID --> Name, Title, Address_First_Line, Address_Second_Line, Address_Third_Line, State, Zip_Code, Month_Joined, Year_Joined, Organization_Code, State_Code, Zip_Area, Inactive_Date, Educator_Site_Ident

FIRST_THREE_ZIP --> Zip_Range_APID, Zip_Range_Test_Site, Population, Site_Code, Installation_Name, OIC_Name, OIC_Title, Address_Line_Two, Address_Line_Three, State, Zip_Code, Capacity, Site_Telephone_Num, Site_Telephone_Ext, Site_Autovon_Number, Site_Autovon_Ext, Assigned_to_Date1, Assigned_to_Date2, Assigned_to_Date3, Assigned_to_Date4, Assigned_to_Date5, Assigned_to_Date6, Assigned_to_Date7, Test_Date1, Test_Date2, Test_Date3, Test_Date4, Test_Date5, Test_Date6, Test_Date7, Test_Time1, Test_Time2, Test_Time3, Test_Time4, Test_Time5, Test_Time6, Test_Time7, Test_Code

FIRST_THREE_ZIP, OIC_NAME --> OIC_First_Address_Line, OIC_Second_Address_Line, OIC_City, OIC_State, OIC_Zip

NOMINATING_AUTHORITY_IDENT --> Title, Name, Assistant_Name, Nominating_Authority_Type, Nominating_Authority_Mgt_Flag, Vacancies_Allowed, Vacancies_Filled, Noms_Auth_Current_AY, Noms_Given_Current_AY

NOMINATING_AUTHORITY_IDENT, ASSISTANT_NAME --> Asst_First_Address_Line, Asst_Second_Address_Line, Asst_Address_City, Asst_Address_State, Asst_Address_Zip_Code, Asst_Telephone

NOMINATING_AUTHORITY_IDENT, NAME --> First_Address_Line, Second_Address_Line, Address_City, Address_State, Address_Zip_Code, Telephone

PRINCETON_NO --> Name, Street, City, State, Zip, HS_ZAC, Interest, Quality_Code, Percent_Onto_College, Ath_Code0, Ath_Code1, Ath_Code2, Ath_Code3, Ath_Code4, Ath_Code5, Ath_Code6, Ath_Code7, Ath_Code8, Ath_Code9, HS_AP_Ident,HS_Site_Ident

SSN, ODIA_SPORT_CODE --> Sport_Position, Sport_Position_Two, Coach_Monitoring, HS_Coach_Evaluation, ODIA_Coach_Eval, Sport_Rating, ODIA_Interest

SSN, PARENT_NAME --> Parent_Type, Parent_Academy, Parent_Grad_Year

SSN, PRINCETON_NO --> HS_Rank_in_Class, HS_Number_in_Class, High_School_Transcript_Flag, SAT_Math, SAT_Verbal, Second_SAT_Math, Second_SAT_Verbal, Source_of_SAT_Scores, ACT_Math_Score, ACT_English_Score, ACT_Nat_Science_Score, ACT_Social_Science_Score, Second_ACT_Math_Score, Second_ACT_English_Score, Second_ACT_Nat_Science_Score, Second_ACT_Soc_Sci_Score, Source_of_ACT_Scores, ACH_Math1, ACH_Math2, ACH_SAT_TSWE, Math_Grade, Eng_Grade, Science_Grade, GPA, HS_Trig, PAE_Event_One_Score, PAE_Event_Two_Score, PAE_Event_Three_Score,PAE_Event_Four_Score, PAE_Event_Five_Score,

(SSN, PRINCETON_NO -->)

PAE_Event_Six_Score,Boys_State_Delegate_State(from CIDB),
Cadet_HS_Rank_Convert_Number(from CIDB),
Test_Leadership_Potential(from CIDB), High_School_Class_Rank_Score

SSN, SIBLING_NAME --> Sibling_Type, Sibling_Academy, Sibling_Grad_Year

APPENDIX D

RELATIONAL TABLES

RELATIONS:

ACADEMIC YEAR INFORMATION (CLASS YEAR, Graduation_Requirement, Term_Requirement)

ACTIVITY_RECORD (CADET ACT CODE 1ST 2ND CHAR, CADET ACT CODE 3RD 4TH CHAR, Activity_Title_In_Season_Flag, Activity_Type, Activity_Code_OIC_Title, Activity_Code_OIC_Rank, Activity_Code_OIC_Name, Activity_Excusal_Code, Activity_A_Squad_Auth, Activity_B_Squad_Auth, Activity_C_Squad_Auth, Activity_CS_Off_Season_Auth, Activity_Code_Coach_Title, Activity_Code_Coach_Rank, Activity_Code_Coach_Name)

ADMISSIONS PARTICIPANT (AO CODE, AP STATE, AP AREA, AP POSITION, SSN, Position_Flag, Organization_Code, Training_Code, Training_Year, Equip_Status_1, Equip_Status_2, Equip_Status_3, Equip_Status_4, Equip_Status_5, Spring_ADT, Fall_ADT, March_IDT, June_IDT, Dec_IDT, Special_Event_Code, Special_Event_Date, Special_Duty_Code, Remarks_First_Line, Remarks_Second_Line)

ADMISSIONS PARTICIPANT INFO (SSN, AP_Name, AP_Title, First_Address_Line, Second_Address_Line, Third_Address_Line, Address_State, Zip_Code. Home_Phone_Area_Code, Home_Phone_Number, Business_Area_Code, Business_Phone_Number, Business_Phone_Ext, Autovon_Number, Autovon_Extension, Branch_of_Service, Military_MOS, Military_Rank, Military_Status, AP_Month_Joined, AP_Year_Joined, USMA_Class_Year)

AWARD (AWARD CODE, Award_Name)

BOOK INFORMATION (BOOK#, Issue_Code, Title, Author, Unit_Price, Transaction_Date, Transaction_Code, Extended_Price, Unit_of_Issue, Books_On_Hand, Est_Del_Date, Qty_Requested, Location, Procure_Inst_No, Procure_Act)

CADET (SSN, Class_Year, Cadet_Alpha_Number, Cadet_Short_Name_Flirsthalf, Cadet_Short_Name_Second_Half, Separation_Flag, Turn_Come_Back_Flag, Deferred_Turnbk_Flag, Term_End_Sep_Flag, Permanent_Company, Permanent_Regiment, First_Company, First_Regiment, Second_Company, Second_Regiment, Crse_Prereq_Check, Crse_Graduation_Check, Field_Of_Study_Check, Field_Of_Study, Area_Identifier, Field_Identifier, SUB_Field_Identifier, Assign_Eval_Flag, Assign_Airborne_Flag, Assign_Ranger_Flag, Assign_Med_Qual_Code, Assign_APFT_Score, Assign_Run_Time,

CADET (Cont'd) Assign_Chinups, Con_Or_Walk_Flag, Demerits_Conduct_Flag, Academic_Advisor_Rank, Academic_Advisor_Name, Academic_Advisor_Dept, Grade_Report_Flag, Sponsor_Rank, Sponsor_Name, Sponsor_Dept, Act_Participation_Category, Plebe_Parent_Weekend_Pos_Held, Mail_Box_Number)

CADET ACADEMIC PLAN (SSN, YEAR, TERM, Course_Prefix, Course_Number, Course_Suffix, Overload, Waive_Prereq, Repeated, Dept_App)

CADET_AWARD (SSN, AWARD YEAR, AWARD MONTH, AWARD DAY, AWARD OCCUR NUM, Award_Code)

CADET_IN_ACTIVITY (SSN, CADET ACT CODE 1ST 2ND CHAR, CADET ACT CODE 3RD 4TH CODE, ACTIVITY START YEAR, ACTIVITY START MONTH, ACTIVITY START DAY , Cadet_Level_Of_Participation, Cadet_Activity_Type, Cadet_Activity_Award, Cadet_Days_In_Activity)

CLASS_STATUS (SSN, STATUS_OCCUR_NUM,

Class_Separated_From, Withdrawal_Year, Withdrawal_Month, Withdrawal_Day, Separation_Year, Separation_Month, Separation_Day, Disposition_Indic, Departure_Year, Departure_Month, Departure_Day, Separation_Indic, Turn_Come_Back_Year, Turn_Come_Back_Month, Turn_Come_Back_Day)

CLASSROOM INFORMATION (CLASSROOM#,Building_Name, Capacity,

Room_Type, Max_Cadets)

COLLEGES (PRIOR_COLLEGE_NAME, Prior_College_City,

Prior_College_State, Prior_College_Zipcode)

COMMANDANT_DETAIL_RECORD (SSN, DETAIL_YEAR,

DETAIL_PERIOD, Loc_Code, Detail_Assignment, Detail_Position_Code, Detail_Battalion, Detail_Regiment, Detail_Company, Detail_Platoon, Detail_Squad, Detail_Rank_Code, Detail_Sick_Calls, Eff_Rpt_Comp, Eff_Rpt_Regt, Eff_Rpt_TAC_Quartile, Eff_Rpt_CC_Quartile, Eff_Rpt_PL_Quartile, Eff_Rpt_PSG_Quartile, Eff_Rpt_1SG_Quartile, Eff_Rpt_Rating_Number, Military_Dev_Index_Term, Military_Dev_Index_Cum, Military_Dev_Index_Cum_OM, Summer_Leadership_Grade, Detail_Development_Board, Detail_Conduct_Board)

COURSE INFORMATION (COURSE_PREFIX, COURSE_NUMBER, COURSE_SUFFIX, YEAR, TERM, Course_Name, Credit_Hours, Lab_Period, Type_Course, Hour_Final, Dept_App, First_Year, First_Term, Min_Cadets, Cadet_Instr_Ratio, Instructor_Name)

COURSE PREREQUISITES (COURSE_PREFIX, COURSE_NUMBER, COURSE_SUFFIX, YEAR, TERM, Prereq_Prefix, Prereq_Number, Prereq_Suffix, Type_Prereq)

CUM_CADET_GRADES (SSN, Cumulative_AOM, Cumulative_GOM, Cumulative_Acad_Percentile, Cumulative_Gen_Percentile, Cumulative_Acad_Credit_Hrs, Cumulative_Gen_Credit_Hrs, Cumulative_Acad_Quality_Pts, Cumulative_Acad_QPA, Cumulative_Gen_QPA, Cumulative_Gen_Quality_Pts, Final_Term_Flag, CQPA_Probation_Flag)

DEMERITS (SSN, DEMERIT_YEAR, DEMERIT_MONTH, DEMERIT_DAY, CADET_OFFENSE_NUMBER, Cadet_Offense_Code, Cadet_Demerits_Awd, Cadet_Demerits_Area_Tours_Awd, Cadet_Demerits_Room_Tours_Awd, Cadet_Demerits_Orig_Name, Cadet_Demerits_Orig_Rank, Cadet_Demerits_Orig_Orgn, Offense_Rescind_Flag, Dem_Post_Year, Dem_Post_Month, Dem_Post_Day, Dem_Post_Time, Dem_Comment_Creation_Year, Dem_Comment_Creation_Month, Dem_Comment_Creation_Day,

DEMERITS (Cont'd) Dem_Comment_Line1, Dem_Comment_Line2, Dem_Comment_Line3, Dem_Comment_Line4, Dem_Comment_Line5, Dem_Comment_Line6, Commanders_Recommendation, Leader_Dimension, Leader_Dimension_Comment_Line, Incentive_Award, Reduced_Privilege)

EDUCATOR (EDUCATOR_ID, Name, Title, Address_First_Line, Address_Second_Line, Address_Third_Line, State, Zip_Code, Month_Joined, Year_Joined, Organization_Code, State_Code, Zip_Area, Inactive_Date, Educator_Site_Ident)

ENTRANCE (SSN, Entrance_Year, Entrance_Month, Entrance_Day, Entrance_District, Entrance_Nomination, Entrance_Height, Entrance_Weight, Entrance_Pullups, Entrance_Swim_Class, Entrance_Recruit_Program, Entrance_Run1, Entrance_Run2, Test_English_Expression, Test_English_Predictor_Rank, Test_TSWE_Score, Test_Nelson_Den_Vocabulary, Test_Nelson_Den_Vccabular_Per, Test_Nelson_Den_Comprehend, Test_Nelson_Den_Comprehend_Per, Test_Nelson_Den_Reading_Rate, Test_Nelson_Den_Reading_Per, Test_Nelson_Den_Vocab_Comp_Per, ACT_SAT_Indic)

EVENTS (EVENT_NAME, LOC_CODE, Begin_DTG, End_DTG)

FATHER & MOTHER (SSN, PARENT NAME, Parent_Title, Parent_Rank, Parent_Name, Parent_Street, Parent_City, Parent_State, Parent_Zipcode, Parent_Living, Parent_Occupation)

GRADUATION_RECORD (SSN, Graduation_Year, Graduation_Month, Graduation_Day, Graduation_Status_Flag, Commission_Year, Commission_Month, Commission_Day, Commission_Flag, Basic_Branch, Detail_Branch, GRE_Verbal, GRE_Analytical, GRE_Quantitative)

HIGH SCHOOL (PRINCETON No, Name, Street, City, State, Zip, HS_ZAC, Interest, Quality_Code, Percent_Onto_College, Ath_Code0, Ath_Code1, Ath_Code2, Ath_Code3, Ath_Code4, Ath_Code5, Ath_Code6, Ath_Code7, Ath_Code8, Ath_Code9, HS_AP_Ident, HS_Site_Ident)

HONOR_BOARD (SSN, HONOR BOARD YEAR, HONOR BOARD MONTH, HONOR BOARD DAY, Honor_Board_Participation)

ILLNESS_RECORD (SSN, ILLNESS YEAR, ILLNESS MONTH, ILLNESS DAY, TIMEIN, Timeout, Type, Disposition, Excused_To_Date)

INJURY_RECORD (SSN, INJURY_YEAR, INJURY_MONTH, INJURY_DAY, INJURY_OCCUR_NUM, Injury_Activity_1st_2nd_Char, Injury_Activity_3rd_4th_Char, Injury_Body_Part_1st_2nd_Char, Injury_Body_Part_3rd_4th_Char, Nature)

LOCATION (LOC_CODE, Loc_Name, OCONUS_Flag)

MONTHLY_DEMERITS (SSN, DEMERIT_YEAR, DEMERIT_MONTH, Monthly_Demerits_Allowed, Monthly_Special_Penalty_Tour, Monthly_Special_Demerits

NOMINATING AUTHORITY (NOMINATING_AUTHORITY_IDENT , Title, Name, Assistant_Name, Nominating_Authority_Type, Nominating_Authority_Mgt_Flag, Vacancies_Allowed, Vacancies_Filled, Noms_Auth_Current_AY, Noms_Given_Current_AY)

NOMINATORS ASSISTANT (NOMINATING_AUTHORITY_IDENT, ASSISTANT_NAME, Asst_First_Address_Line, Asst_Second_Address_Line, Asst_Address_City, Asst_Address_State, Asst_Address_Zip_Code, Asst_Telephone)

NOMINATORS NAME (NOMINATING_AUTHORITY_IDENT, NAME, First_Address_Line, Second_Address_Line, Address_City, Address_State, Address_Zip_Code, Telephone)

NON_CADET (SSN, Individual_File_Status, Individual_Status_Elaboration, Individual_Status_Authority, Individual_Status_Date, Offer_of_Admission_Date, Status_Elaboration_Date, Academic_Evaluation_Status, Academic_Quality_Zone, Physical_Aptitude_Status, Physical_Aptitude_Quality_Zone, Medical_Evaluation_Status, Medical_Quality_Zone, Leadership_Evaluation_Status, Leadership_Quality_Zone, Med_Waiver_Status, Name_Individual, First_Address_Line, Second_Address_Line, Address_City, Address_State, Address_Zip_Code, Telephone_Number, Recruit_Pgm_Code, Sex, Height, Weight, Ethnic_Background, Race, Birth_Year, Birth_Month, Birth_Day, State_of_Domicile, District_of_Residence, USMA_Geneology, Parent_Academy, Sibling_Academy, Prior_Active_Duty, Current_Active_Duty,Transcript_Grad_Year, Ent_Appointment_State, Ent_Senator_or_District_No, Ent_Source_Sequence_No, Ent_Nomination_Type, Number_of_Nominations, Record_Source_of_Creation, Record_Creation_Date, Record_Last_Update_Date, Whole_Candidate_Score, College_Entrance_Exam_Rank, Academic_Supplement_Score, PAE_Score, PAE_Score2, PAE_Score3, PAE_Source_Code, NON_CADET (Cont'd) Leadership_Potential_Score, Qualified_Alternate_Score, File_Evaluation_Score, CEER_Source, PAE_Adjustment_Score, Qualified_Alt_Adjustment_Score, CEER_Adjustment_Score, LPS_Adjustment_Score, Whole_Cand_Adjust_Score, Retention_Index, College_Transcript_Flag, Prep_School_Name_Code, Percent_Onto_College, ADM_Officer_Eval_Score, ADM_Committee_Eval_Score, Acad_Bd_Eval_Score, Work_Experience_Years, Work_Hours_Per_Week, Work_Experience_Type, Extracurric_Activities_Score, Athletic_Activities_Score, Faculty_Appraisal_Score, High_School_Class_Rank_Score, College_Board_Avg, Compensating_Evidence, LC_Score, Class_Rank_Readjustment, Class_Rnk_Readj_Reason, Prelimimary_SAT_Verbal, Preliminary_SAT_Math, Nominational_Assistance, USMA_Application_History, Prep_School_Entrance_Final, Prep_School_Recruit_Pop, Applicant_AO_Code, Applicant_State_Code, Applicant_Area_Code, Applicant_Position_Code, Applicant_Test_Site_Code, Physical_Aptitude_Exam_Type, Interview_on_File, Cand_Pers_Stmt, Employers_Evaluation, Activities_Rec_DD_1868, Pers_Data_Rec_DD_1867, School_Official_Eval_Count, Force_Summary_Sheet, HS_Transcript_Request, LOA_LOE_Code, Special_Letter_Two, DODMERB_Notification_Flag, WCS_Change_Flag, Birth_Certificate,

NON_CADET (Cont'd) Parent_Consent_Form, SOE_From_English, SOE_From_Math, SOE_From_Physics, SOE_From_Coach_PE, SOE_From_Counselor, SOE_From_Other, Academic_Status_Date, Physical_Aptitude_Status_Date, Medical_Status_Date, Leadership_Status_Date, Second_Step_Kit_Sent_Date, Date_5_413_And_5_480, Special_Letter_One_Date, Special_Letter_Two_Date, Address_Change_Flag, Special_Report_Code1, Special_Report_Code2, Special_Report_Code3, Special_Report_Code4, Special_Report_Code5, Special_Report_Code6, Transfer_To_Cadet_Flag)

PARENT ACADEMY (SSN, PARENT_NAME, Parent_Type, Parent_Academy, Parent_Grad_Year)

PERSONAL_DATA (SSN, Cadet_Long_Name, Emergency_Phone_Num, State_Of_Domicile, City_Of_Domicile, Birthdate_Year, Birthdate_Month, Birthdate_Day, Birth_City, Birth_State, Ethnic_Code, Blood_Type, Current_Height, Current_Weight, Pullups, Sex, Religion_Code, Race_Code)

PRIOR_COLLEGE (SSN, PRIOR_COLLEGE_NAME, Prior_College_Months)

PRIOR_SERVICE (SSN, Prep_School_Name_Indic, Service_Component, Regular_Or_Res_Indic, Service_Months, Military_MOS, Current_Active_Duty_Indic, Citations_Received_Indic, Wounds_Received_Indic)

REQUIRED COURSES (FIELD OF STUDY, Course_Prefix, Course_Number, Course_Suffix)

SECTIONS (COURSE PREFIX, COURSE NUMBER, COURSE SUFFIX, YEAR, TERM, HOUR, SECTION , Number_Enrolled, Max_Marks, TEE_Max_Marks, TEE_Hour, Academic_Grades_Expand)

SERVICE_INFO (SSN, PARENT NAME, Parent_Serv_Rank, Parent_Serv_Status, Parent_Serv_Component)

SIBLING ACADEMY (SSN, SIBLING NAME, Sibling_Type, Sibling_Academy, Sibling_Grad_Year)

SPORTS RECORD (SSN, ODIA SPORT CODE, Sport_Position, Sport_Position_Two, Coach_Monitoring, HS_Coach_Evaluation, ODIA_Coach_Eval, Sport_Rating, ODIA_Interest)

TERM_CADET_GRADES (SSN, ACADEMIC YEAR, ACADEMIC TERM, Term_Academic_OM, Term_General_OM, Term_Academic_Percentile, Term_General_Percentile, Term_Academic_Quality_Pts, Term_Academic_Credit_Hrs, Term_Acad_QPA, Term_End_Graybk_Flag, Term_Gen_QPA, Term_Gen_Quality_Pts, Term_Gen_Credit_Hrs, Term_Deans_List, Deans_Graybk_Recomm_Code, TQPA_Probation_Flag, Year_Term_Active_Flag)

TRIP_RECORD (CADET ACT CODE 1ST 2ND CHAR, CADET ACT CODE 3RD 4TH CHAR, TRIP ID, Trip_Address_Name, Trip_Address_City, Trip_Address_State, Trip_Address_Zipcode, Trip_Address_Phone, Trip_OIC_Title, Trip_OIC_Rank, Trip_OIC_Name, Trip_CIC, Trip_Departure_Year, Trip_Departure_Month, Trip_Departure_Day, Trip_Departure_Time, Trip_Return_Year, Trip_Return_Month, Trip_Return_Day, Trip_Return_Time, Trip_Uniform, Trip_Assembly_Point, Trip_Trans_Type, Trip_Half_Days_Used, Trip_Study_Periods_Used)

VALIDATES (SSN, COURSE PREFIX, COURSE NUMBER, COURSE SUFFIX, YEAR, TERM , Cadet_Validation_Course_Desc, Cadet_Validation_Course_Type)

YEAR_CADET_GRADES (SSN, ACADEMIC_YEAR,

Year_Summary_AOM, Year_Summary_GOM,
Year_Summary_Acad_Percentile, Year_Summary_Gen_Percentile,
Year_Summary_Acad_Quality_Pts, Year_Summary_Acad_Credit_Hrs,
Year_Summary_Acad_QPA, Year_Summary_Gen_QPA,
Year_Summary_Gen_Quality_Pts, Year_Summary_Gen Credit_Hrs,
Year_Summary_Disting_Cadet)

YEARLY_DEMERITS (SSN, DEMERIT_YEAR,

Yearly_Prob_End_Year, Yearly_Prob_End_Month,
Yearly_Prob_End_Day, Yearly_Special_Penalty_Tour,
Yearly_Special_Demerits)

ZIP MASTER (FIRST_THREE_ZIP, Zip_Range_APID,

Zip_Range_Test_Site, Population, Site_Code, Installation_Name,
OIC_Name, OIC_Title, Address_Line_Two, Address_Line_Three, State,
Zip_Code, Capacity, Site_Telephone_Num, Site_Telephone_Ext,
Site_Autovon_Number, Site_Autovon_Ext, Assigned_to_Date1,
Assigned_to_Date2, Assigned_to_Date3, Assigned_to_Date4,
Assigned_to_Date5, Assigned_to_Date6, Assigned_to_Date7, Test_Date1,
Test_Date2, Test_Date3, Test_Date4, Test_Date5, Test_Date6, Test_Date7,
Test_Time1, Test_Time2, Test_Time3, Test_Time4, Test_Time5,
Test_Time6, Test_Time7, Test_Code)

ZIP MASTER OIC (FIRST_THREE_ZIP, OIC_NAME, OIC_First_Address_Line, OIC_Second_Address_Line, OIC_City, OIC_State, OIC_Zip)

RELATIONSHIPS:

ABSENT_RECORD (SSN, COURSE PREFIX,COURSE NUMBER, COURSE SUFFIX, YEAR, TERM, HOUR, SECTION, Absent_Year, Absent_Month, Absent_Day, Absent_Status, Absent_Reason)

ARE (AO CODE, AP STATE, AP AREA, AP POSITION, SSN)

ARE_IN(COURSE PREFIX, COURSE NUMBER, COURSE SUFFIX, YEAR, TERM, HOUR, SECTION, CLASSROOM#)

BELONGS_TO (FIRST THREE ZIP, EDUCATOR ID)

EARNS_GRADE_IN (SSN, COURSE PREFIX, COURSE NUMBER, COURSE SUFFIX, YEAR, TERM, HOUR, Course_Elective_Flag, Enrollment_Type, Cum_Marks, Average, Letter_Grade, Order_of_Merit,TEE_Cum_Marks, TEE_Average, Course_Percentile, Grade_Per_Day, Grade_Per_Month, Grade_Per_Year)

FOR (CADET ACT CODE 1ST 2ND CHAR, CADET ACT CODE 3RD 4TH CHAR, TRIP ID)

HAS_MANY (FIRST THREE ZIP, AO CODE, AP STATE, AP AREA, AP POSITION)

HS_PERSONAL(SSN, PRINCETON_NO, HS_Rank_in_Class, HS_Number_in_Class, High_School_Transcript_Flag, SAT_Math, SAT_Verbal, Second_SAT_Math, Second_SAT_Verbal, Source_of_SAT_Scores, ACT_Math_Score, ACT_English_Score, ACT_Nat_Science_Score, ACT_Social_Science_Score, Second_ACT_Math_Score, Second_ACT_English_Score, Second_ACT_Nat_Science_Score, Second_ACT_Soc_Sci_Score, Source_of_ACT_Scores, ACH_Math1, ACH_Math2, ACH_SAT_TSWE, Math_Grade, Eng_Grade, Science_Grade, GPA, HS_Trig, PAE_Event_One_Score, PAE_Event_Two_Score, PAE_Event_Three_Score, PAE_Event_Four_Score, PAE_Event_Five_Score, PAE_Event_Six_Score, Boys_State_Delegate_State(from CIDB), Cadet_HS_Rank_Convert_Number (from CIDB), Test_Leadership_Potential (from CIDB), High_School_Class_Rank_Score)

IS_AN (SSN, AWARD_YEAR, AWARD_MONTH, AWARD_DAY, AWARD_OCCUR_NUM, AWARD_CODE)

IS_ASSIGNED_TO (SSN, FIRST_THREE_ZIP)

IS_RELATED_TO (COURSE_PREFIX, COURSE_NUMBER, COURSE_SUFFIX, YEAR, TERM, BOOK#)

MILEAGE (LOC CODE TO, LOC CODE FROM, Miles)

NOM_RECORD (NOMINATING AUTHORITY IDENT, SSN)

TAKES_PART_IN (SSN, YEAR, TERM, COURSE PREFIX, COURSE NUMBER, COURSE SUFFIX)

TAKES_TRIPS (SSN, CADET ACT CODE 1ST 2ND CHAR, CADET ACT CODE 3RD 4TH CHAR, TRIP ID)

VALIDATES (SSN, COURSE PREFIX, COURSE NUMBER, COURSE SUFFIX, YEAR, TERM, Reason)

CALCULATED FIELDS:

SAT_Math_Avg = SAT_Math + Second_SAT_Math / 2 (HS_PERSONAL)

SAT_Verbal_Avg = SAT_Verbal + Second_SAT_Verbal / 2 (HS_PERSONAL)

ACT_Math_Avg = ACT_Math_Score + Second_ACT_Math_Score / 2 (HS_PERSONAL)

ACT_English_Avg = ACT_English_Score + Second_ACT_English_Score / 2 (HS_PERSONAL)

ACT_Nat_Science_Avg = ACT_Nat_Science_Score + Second_ACT_Nat_Science_Score / 2 (HS_PERSONAL)

ACT_Soc_Sci_Avg = ACT_Social_Science_Score + Second_ACT_Sco_Sci_Score / 2 (HS_PERSONAL)

ACH_Avg = ACH_Math1 + ACH_Math2 / 2 (HS_PERSONAL)

NOTES:

1. If one of the fields to be summed is empty, then the average is the non-empty field.

2. The name in parentheses is the name of the table where the attributes are located.

Half_Days_Used = the total of Trip_Half_Days_Used for all of the (TRIP_RECORD) tables.

Study_Periods_Used = the total of Trip_Study_Periods_Used for all the (TRIP_RECORD) tables.

Test_English_Predictor = Test_English_Expression (ENTRANCE) * .00509 + Cadet_HS_Rank_Convert_No (HS_PERSONAL) * .00432 + SAT_Verbal HS_PERSONAL) * .000507 + 1.456 * 1000

Yearly_Demerits_Received = the sum of the Cadet_Demerits_Award field of all the (DEMERITS) tables for a particular 12 month period (can be either calendar or fiscal year).

Monthly_Demerits_Received = the sum of the Cadet_Demerits_Award field of all the (DEMERITS) tables for a particular month.

APPENDIX E

INTERMEDIATE FILE FORMATS

PERSONAL_DATA

SSN	Cadet_R.Cadet_SSAN	char(11)
Cadet_Long_Name	CPD_R.Cadet_Long_Name	char(60)
Emergency_Phone_Number	CPD_R.Emergency_Phone_Nbr	char(10)
State_Of_Domicile	CPD_R.State_Of_Domicile	char(2)
City_Of_Domicile	CPD_R.City_Of_Domicile	char(17)
Birthdate_Year	CPD_R.Cadet_Birth_Date_Year	num(2)
Birthdate_Month	CPD_R.Cadet_Birth_Date_Month	num(2)
Birthday_Day	CPD_R.Cadet_Birth_Date_Day	num(2)
Birth_City	CPD_R.Cadet_Birth_City	char(17)
Birth_State	CPD_R.Cadet_Birth_State	char(2)
Ethnic_Code	CPD_R.Cadet_Ethnic_Code	char(1)
Blood_Type	Cadet_R.Cadet_Blood_Type	char(3)
Current_Height	Cadet_R.Cadet_Current_Height	num(2)
Current_Weight	Cadet_R.Cadet_Current_Weight	num(3)
Pullups	Cadet_R.Cadet_Current_Pullups	num(2)
Sex	Cadet_R.Cadet_Sex_Flag	char(1)
Race_Code	Cadet_R.Cadet_Race_Code	char(1)
Religion_Code	Cadet_R.Cadet_Religion_Code	char(2)

**NOTE: CPD_R stands for Cadet-Personal-Data-Record

Cadet_R stands for Cadet-Record

PRIOR_SERVICE

SSN	Cadet_R.Cadet_SSAN	char(11)
Prep_School_Name_Indic	PCS_R.Prep_School_Name_Indic	char(2)
Service_Component	PCS_R.Service_Component	char(1)
Regular_Or_Res_Indic	PCS_R.Regular_Or_Reserve_Indic	char(1)
Service_Months	PCS_R.Service_Months	num(2)
Military_MOS	PCS_R.Military_MOS	char(5)
Current_Active_Duty_Indic	PCS_R.Current_Active_Duty_Indic	char(1)
Citations_Received_Indic	PCS_R.Citations_Received_Indic	char(1)
Wounds_Received_Indic	PCS_R.Wounds_Received_Indic	char(1)

**NOTE: PCS_R stands for Prior-College-Service-Record.

Cadet_R stands for Cadet-Record

CUM_CADET_GRADES

SSN	Cadet_R.Cadet_SSAN	char(11)
Cumulative_AOM	CAYT_R.Cumulative_AOM	num(4)
Cumulative_GOM	CAYT_R.Cumulative_GOM	num(4)
Cumulative_Acad_Percentile	CAYT_R.Cumulative_Acad_Percentile	num(4.1)
Cumulative_Gen_Percentile	CAYT_R.Cumulative_Gen_Percentile	num(4.1)
Cumulative_Acad_Credit_Hrs	CAYT_R.Cumulative_Acad_Credit_Hrs	num(5.2)
Cumulative_Gen_Credit_Hrs	CAYT_R.Cumulative_Gen_Credit_Hrs	num(5.2)
Cumulative_Acad_Quality_Pts	CAYT_R.Cumulative_Acad_Quality_Pt	num(6.2)
Cumulative_Acad_QPA	CAYT_R.Cumulative_Acad_QPA	num(4.3)
Cumulative_Gen_QPA	CAYT_R.Cumulative_Gen_QPA	num(4.3)
Cumulative_Gen_Quality_Pts	CAYT_R.Cumulative_Gen_Quality_Pts	num(6.2)
Final_Term_Flag	CAYT_R.Final_Term_Flag	char(1)
CQPA_Probation_Flag	CAYT_R.CQPA_Probation_Flag	char(1)

**NOTE: CAYT_R stands for Cadet-Acad-Year-Term-Record

Cadet_R stands for Cadet-Record

EARNS_GRADE_IN

SSN	CAYT_R.Academic_SSAN	char(11)
Course_Prefix	AG_R.Grades_Course_Prefix	char(2)
Course_Number	AG_R.Grades_Course_Number	char(3)
Course_Suffix	AG_R.Grades_Course_Suffix	char(1)
Year	CAYT_R.Academic_Year	num(2)
Term	CAYT_R.Academic_Term	num(1)
Course_Elective_Flag	AG_R.Grades_Course_Elective_Flag	char(1)
Enrollment_Type	AG_R.Grades_Course_Enrollment_Type	char(1)
Cum_Marks	AG_R.Grades_Course_Cum_Marks	num(5.1)
Average	AG_R.Grades_Course_Average	num(4.1)
Letter_Grade	AG_R.Grades_Course_Letter_Grade	char(2)
Order_Of_Merit	AG_R.Grades_Course_OM	num(4)
TEE_Cum_Marks	AG_R.TEE_Cum_Marks	num(5.1)
TEE_Average	AG_R.TEE_Average	num(4.1)
Course_Percentile	AG_R.Grades_Course_Percentile	num(4.1)
Hour	AG_R.Grades_Course_Hour	char(1)
Grade_Per_Day	C_R.Course_Percentage_Day	num(2)
Grade_Per_Month	C_R.Course_Percentage_Month	num(2)
Grade_Per_Year	C_R.Course_Percentage_Year	num(2)

**NOTE: CAYT_R stands for Cadet Acad-Year-Term-Record

AG_R stands for Academic-Grades-Record

C_R stands for Course_Record

CADET

SSN	Cadet_R.Cadet_SSAN	char(11)
Class_Year	Cadet_R.Cadet_Grad_Year	char(2)
Cadet_Alpha_Number	Cadet_R.Cadet_Alpha_Number	char(5)
Cadet_Short_Name_First_Half	Cadet_R.Cadet_Short_Name_Char1_17	char(17)
Cadet_Short_Name_Second_Half	Cadet_R.Cadet_Short_Name_Char18_27	char(10)
Separation_Flag	Cadet_R.Cadet_Separation_Flag	char(1)
Turn_Come_Back_Flag	Cadet_R.Cadet_Turn_Come_Back_Flag	char(1)
Deferred_Turnbk_Flag	Cadet_R.Cadet_Deferred_Turnbk_Flag	char(1)
Term_End_Sep_Flag	Cadet_R.Cadet_Term_End_Sep_Flag	char(1)
Permanent_Company	Cadet_R.Cadet_Perm_Company	char(1)
Permanent_Regiment	Cadet_R.Cadet_Perm_Regiment	char(1)
First_Company	Cadet_R.Cadet_1st_Comp	char(1)
First_Regiment	Cadet_R.Cadet_1st_Regt	char(1)
Second_Company	Cadet_R.Cadet_2nd_Comp	char(1)
Second_Regiment	Cadet_R.Cadet_2nd_Regt	char(1)
Crse_Prereq_Check	CPD_R.Cadet_Crse_Prerequisite_Check	char(1)
Crse_Graduation_Check	CPD_R.Cadet_Crse_Graduation_Check	char(1)
Field_Of_Study_Check	CPD_R.Cadet_Field_Of_Study_Check	char(1)
Area_Identifier	CPD_R.Cadet_Area_Identifier	char(1)
Field_Identifier	CPD_R.Cadet_Field_Identifier	char(1)
Sub_Field_Identifier	CPD_R.Cadet_Sub_Field_Identifier	char(1)
Area2_Identifier	*** New Field ***	char(1)
Field2_Identifier	*** New Field ***	char(1)
Sub_Field2_Identifier	*** New Field ***	char(1)

CADET(contd)

Assign_Eval_Flag	CPD_R.Cadet_Assign_Eval_Flag	char(1)
Assign_Airborne_Flag	CPD_R.Cadet_Assign_Airborne_Flag	char(1)
Assign_Ranger_Flag	CPD_R.Cadet_Assign_Ranger_Flag	char(1)
Assign_Med_Qual_Code	CPD_R.Cadet_Assign_Med_Qual_Code	char(1)
Assign_APFT_Score	CPD_R.Cadet_Assign_APFT_Score	num(3)
Assign_Run_Time	CPD_R.Cadet_Assign_Run_Time	num(4)
Assign_Chinups	CPD_R.Cadet_Assign_Chinups	num(2)
Con_Or_Walk_Flag	CPD_R.Cadet_Con_Or_Walk_Flag	char(1)
Demerits_Conduct_Flag	CPD_R.Cadet_Demerits_Conduct_Flag	char(1)
Academic_Advisor Rank	CPD_R.Academic_Advisor_Rank	char(4)
Academic_Advisor_Name	CPD_R.Academic_Advisor_Name	char(27)
Academic_Advisor_Dept	CPD_R.Academic_Advisor_Dept	char(4)
Grade_Report_Flag	CPD_R.Cadet_Grade_Report_Flag	char(1)
Sponsor_Rank	CPD_R.Sponsor_Rank	char(4)
Sponsor_Name	CPD_R.Sponsor_Name	char(27)
Sponsor_Dept	CPD_R.Sponsor_Dept	char(4)
Act_Participation_Category	CY_R.Act_Participation_Category	char(1)
Plebe_Parent_Weekend_Pos_Held	CD_R.Plebe_Parent_Weekend_Pos_Held	char(3)
Mail_Box_Number	CPD_R.Cadet_Mail_Box_Nbr	char(4)

**NOTE: Cadet_R stands for Cadet-Record
CPD_R stands for Cadet-Personal_Data-Record
CD_R stands for Commandant-Detail-Record
CY_R stands for Commandant-Year-Record

NON CADET

SSN	Ind_R.SSN	char(11)
Individual_File_Status	Ind_R.Ind_File_Status	char(1)
Individual_Status_Elaboration	Ind_R.Ind_Status_Elaboration	char(1)
Individual_Status_Authority	Ind_R.Ind_Status_Authority	char(1)
Individual_Status_Date	Ind_R.Date_Ind_Status	char(4)
Offer_Of_Admission_Date	Ind_R.Date_Offer_Of_Admission	char(4)
Status_Elaboration_Date	Ind_R.Date_Status_Elaboration	char(4)
Academic_Evaluation_Status	Ind_R.Academic_Evaluation_Status	char(1)
Academic_Quality_Zone	Ind_R.Academic_Quality_Zone	char(1)
Physical_Aptitude_Status	Ind_R.Physical_Aptitude_Status	char(1)
Physical_Aptitude_Quality_Zone	Ind_R.Physical_Aptitude_Quality_Zone	char(1)
Medical_Evaluation_Status	Ind_R.Medical_Evaluation_Status	char(1)
Medical_Quality_Zone	Ind_R.Medical_Quality_Zone	char(1)
Leadership_Evaluation_Status	Ind_R.Leadership_Evaluation_Status	char(1)
Leadership_Quality_Zone	Ind_R.Leadership_Quality_Zone	char(1)
Med_Waiver_Status	Ind_R.Med_Waiver_Status	char(1)
Name_Individual	Ind_R.Name_Ind	char(27)
First_Address_Line	Ind_R.First_Address_Line_Ind	char(28)
Second_Address_Line	Ind_R.Second_Address_Line_Ind	char(28)
Address_City	Ind_R.Addr_City	char(17)
Address_State	Ind_R.Addr_State	char(2)
Address_Zip_Code	Ind_R.Addr_Zip_Indic	char(9)

NON CADET(cont)

Telephone_Number	Ind_R.Telephone_Number	char(10)
Recruit_Pgm_Code	Ind_R.Recruit_Pgm_Indic	char(2)
Sex	Ind_R.Sex	char(1)
Height	Ind_R.Height_Ind	char(2)
Weight	Ind_R.Weight_Ind	char(3)
Ethnic_Background	Ind_R.Ethnic_Group	char(1)
Race	Ind_R.Race_Pop_Grp	char(1)
Birth_Year	Ind_R.Birth_Year	num(2)
Birth_Month	Ind_R.Birth_Month	num(2)
Birth_Day	Ind_R.Birth_Day	num(2)
State_Of_Domicile	Ind_R.State_Of_Domicile	char(2)
District_Of_Residence	Ind_R.District_Of_Residence	char(2)
USMA_Geneology	Ind_R.USMA_Geneology	char(1)
Parent_Academy	Ind_R.Parent_Academy	char(1)
Sibling_Academy	Ind_R.Sibling_Svc_Academy	char(1)
Prior_Active_Duty	Ind_R.Prior_Active_Duty	char(1)
Current_Active_Duty	Ind_R.Current_Active_Duty	char(1)
Transcript_Grad_Year	Ind_R.Transcript_Grad_Year	char(2)
Ent_Appointment_State	Ind_R.Ent_Appointment_State	char(2)
Ent_Senator_Or_District_No	Ind_R.Ent_Senator_Or_District_No	char(2)
Ent_Source_Sequence_No	Ind_R.Ent_Source_Sequence_No	char(1)
Ent_Nomination_Type	Ind_R.Ent_Nomination_Type	char(1)
Number_Of_Nominations	Ind_R.Number_Of_Nominations	num(1)

NON CADET(cont)

Record_Source_Of_Creation	Ind_R.Record_Source_Of_Creation	char(1)
Record_Creation_Date	Ind_R.Record_Creation_Date	char(4)
Record_Last_Update_Date	Ind_R.Record_Last_Update_Date	char(4)
Whole_Candidate_Score	Ind_R.Whole_Candidate_Score	num(4)
College_Entrance_Exam_Rank	Ind_R.College_Entrance_Exam_Rank	num(3)
Academic_Supplement_Score	Ind_R.Academic_Supplement_Score	num(3)
PAE_Score	Ind_R.Physical_Aptitude_Exam_Score	num(3)
PAE_Score2	Ind_R.PAE_Score2	num(3)
PAE_Score3	Ind_R.PAE_Score3	num(3)
PAE_Source_Code	Ind_R.PAE_Source_Indic	char(1)
Leadership_Potential_Score	Ind_R.Leadership_Potential_Score	num(3)
Qualified_Alternate_Score	Ind_R.Qualified_Alternate_Score	num(4)
File_Evaluation_Score	Ind_R.File_Evaluation_Score	num(3)
CEER_Source	Ind_R.CEER_Source_Flag	char(1)
PAE_Adjustment_Score	Ind_R.PAE_Adjustment_Score	num(3)
Qualified_Alt_Adjustment_Score	Ind_R.Qualified_Alt_Adjustment_Score	num(3)
CEER_Adjustment_Score	Ind_R.CEER_Adjustment_Score	num(3)
LPS_Adjustment_Score	Ind_R.LPS_Adjustment_Score	num(3)
Whole_Cand_Adjust_Score	Ind_R.Whole_Cand_Adjust_Score	num(3)
Retention_Index	Ind_R.Retention_Index	num(3)
College_Transcript_Flag	Ind_R.College_Transcript_Flag	char(1)
Prep_School_Name_Code	Ind_R.Ind_Prep_School_Name_Indic	char(1)

NON CADET(cont)

Percent_Onto_College	Ind_R.Ind_Percent_Onto_College	char(3)
ADM_Officer_Eval_Score	Ind_R.ADM_Officer_Eval_Score	num(4)
ADM_Committee_Eval_Score	Ind_R.ADM_Committee_Eval_Score	num(4)
Acad_Bd_Eval_Score	Ind_R.Acad_Bd_Eval_Score	num(4)
Work_Experience_Years	Ind_R.Work_Experience_Years	num(1)
Work_Hours_Per_Week	Ind_R.Work_Hours_Per_Week	num(2)
Work_Experience_Type	Ind_R.Work_Experience_Type	num(1)
Extracurric_Activities_Score	Ind_R.Extracurric_Activities_Score	num(3)
Athletic_Activities_Score	Ind_R.Athletic_Activities_Score	num(3)
Faculty_Appraisal_Score	Ind_R.Faculty_Appraisal_Score	num(3)
High_School_Class_Rank_Score	Ind_R.High_School_Class_Rank_Score	num(3)
College_Board_Avg	Ind_R.College_Board_Average	num(3)
Compensating_Evidence	Ind_R.Compensating_Evidence	num(4)
LC_Score	Ind_R.LC_Score	num(3)
Class_Rank_Readjustment	Ind_R.Class_Rank_Readjustment	num(2)
Class_Rnk_Readj_Reason	Ind_R.Class_Rnk_Readj_Reason	num(1)
Preliminary_SAT_Verbal	Ind_R.Preliminary_SAT_Verbal	num(2)
Preliminary_SAT_Math	Ind_R.Preliminary_SAT_Math	num(2)
Nominational_Assistance	Ind_R.Nominational_Assistance	char(1)
USMA_Application_History	Ind_R.USMA_Application_History	char(1)
Prep_School_Entrance_Final	Ind_R.Prep_School_Entrance_Final	char(1)
Prep_School_Recruit_Pop	Ind_R.Prep_School_Recruit_Pop	char(1)
Applicant_AO_Code	Ind_R.Applicant_AO_Indic	char(2)
Applicant_State_Code	Ind_R.Applicant_State_Indic	char(2)

NON_CADET(cont)

Applicant_Area_Code	Ind_R.Applicant_Area_Indic	char(1)
Applicant_Position_Code	Ind_R.Applicant_Position_Indic	char(2)
Applicant_Test_Site_Code	Ind_R.Applicant_Test_Site_Indic	char(4)
Physical_Aptitude_Exam_Type	Ind_R.Physical_Aptitude_Exam_Type	char(1)
Interview_On_File	Ind_R.Interview_On_File_Flag	char(1)
Cand_Pers_Stmt	Ind_R.Cand_Pers_Stmt_Code	char(1)
Employers_Evaluation	Ind_R.Employers_Evaluation_Flag	char(1)
Activities_Rec_DD_1868	Ind_R.Activities_Rec_DD1868_Flag	char(1)
Pers_Data_Rec_DD_1867	Ind_R.Pers_Data_Rec_DD1867_Flag	char(1)
School_Official_Eval_Count	Ind_R.School_Official_Eval_Count	num(1)
Force_Summary_Sheet	Ind_R.Force_Summary_Sheet_Flag	char(1)
HS_Transcript_Request	Ind_R.HS_Transcript_Request_Flag	char(1)
LOA_LOE_Code	Ind_R.LOA_LOE_Indic	char(1)
Special_Letter_Two	Ind_R.Special_Letter_Two	char(1)
DODMERB_Notification_Flag	Ind_R.DODMERB_Notification_Flag	char(1)
WCS_Change_Flag	Ind_R.WCS_Change_Flag	char(1)
Birth_Certificate	Ind_R.Birth_Certificate	char(1)
Parent_Consent_Form	Ind_R.Parent_Consent_Form	char(1)
SOE_From_Coach_PE	Ind_R.SOE_From_Coach_PE	char(1)
SOE_From_Counselor	Ind_R.SOE_From_Counselor	char(1)
SOE_From_Other	Ind_R.SOE_From_Other	char(1)
Academic_Status_Date	Ind_R.Academic_Status_Date	char(4)
Physical_Aptitude_Status_Date	Ind_R.Physical_Aptitude_Status_Date	char(4)

NON CADET(cont)

Medical_Status_Date	Ind_R.Medical_Status_Date	char(4)
Leadership_Status_Date	Ind_R.Leadership_Status_Date	char(4)
Second_Step_Kit_Sent_Date	Ind_R.Second_Step_Kit_Sent_Date	char(4)
Date_5_413_And_5_480	Ind_R.5_413_Date_5_480_Date	char(4)
Special_Letter_One_Date	Ind_R.Special_Letter_One_Date	char(4)
Special_Letter_Two_Date	Ind_R.Special_Letter_Two_Date	char(4)
Address_Change_Flag	Ind_R.Address_Change_Flag	char(1)
Special_Report_Code1	Ind_R.Special_Report_Indic1	char(1)
Special_Report_Code2	Ind_R.Special_Report_Indic2	char(1)
Special_Report_Code3	Ind_R.Special_Report_Indic3	char(1)
Special_Report_Code4	Ind_R.Special_Report_Indic4	char(1)
Special_Report_Code5	Ind_R.Special_Report_Indic5	char(1)
Special_Report_Code6	Ind_R.Special_Report_Indic6	char(1)
Transfer_To_Cadet_Flag	*** New Field ***	char(1)
Physical_Aptitude_Resched	Ind_R.Physical_Aptitude_Reschedule	char(1)

**NOTE: Ind_R stands for Individual-Record

TERM CADET GRADES

SSN	CAYT_R.Academic_SSAN	char(11)
Academic_Year	CAYT_R.Academic_Year	num(2)
Academic_Term	CAYT_R.Academic_Term	num(1)
Term_Academic_OM	CAYT_R.Term_Academic_OM	num(4)
Term_General_OM	CAYT_R.Term_General_OM	num(4)
Term_Academic_Percentile	CAYT_R.Term_Academic_Percentile	num(4.1)
Term_General_Percentile	CAYT_R.Term_General_Percentile	num(4.1)
Term_Academic_Quality_Pts	CAYT_R.Term_Acad_Quality_Pts	num(5.2)
Term_Academic_Credit_Hrs	CAYT_R.Term_Acad_Credit_Hrs	num(4.2)
Term_Acad_QPA	CAYT_R.Term_Acad_QPA	num(4.3)
Term_End_Graybk_Flag	CAYT_R.Term_End_Graybk_Flag	char(1)
Term_Gen_QPA	CAYT_R.Term_Gen_QPA	num(4.3)
Term_Gen_Quality_Pts	CAYT_R.Term_Gen_Quality_Pts	num(5.2)
Term_Gen_Credit_Hrs	CAYT_R.Term_Gen_Credit_Hrs	num(4.2)
Term_Deans_List	CAYT_R.Term_Deans_List	char(1)
Deans_Graybk_Recomm_Code	CAYT_R.Deans_Graybk_Recomm_Code	char(3)
TQPA_Probation_Flag	CAYT_R.TQPA_Probation_Flag	char(1)
Year_Term_Active_Flag	CAYT_R.Year_Term_Active_Flag	char(1)

**NOTE: CAYT_R stands for Cadet-Acad-Year-Term-Record

SERVICE INFO

SSN	Cadet_R.Cadet_SSAN	char(11)
Parent_Name	CPD_R.Parent_Name	char(27)
Parent_Serv_Rank	CPD_R.Parent_Rank	char(4)
Parent_Serv_Status	CPD_R.Father_Serv_Status	num(2)
Parent_Serv_Component	CPD_R.Father_Serv_Component	char(1)

**NOTE: Cadet_R stands for Cadet-Record

CPD_R stands for Cadet-Personal-Data-Record

APPENDIX F

SQL LOADER PROGRAMS

SQL*LOADER PROGRAM FOR ‘PERSONAL_DATA’

```
LOAD DATA
INFILE PERSDAT.DAT
INTO TABLE PERSONAL_DATA
( SSN                      POSITION(01-11)    CHAR,
    Cadet_Long_Name        POSITION(12-71)    CHAR,
    Emergency_Phone_Number POSITION(72-81)    CHAR,
    State_Of_Domicile      POSITION(82-83)    CHAR,
    City_Of_Domicile       POSITION(84-100)   CHAR,
    Birthdate_Year         POSITION(101-102)  INTEGER EXTERNAL,
    Birthdate_Month        POSITION(103-104)  INTEGER EXTERNAL,
    Birthdate_Day          POSITION(105-106)  INTEGER EXTERNAL,
    Birth_City             POSITION(107-123)  CHAR,
    Birth_State            POSITION(124-125)  CHAR,
    Ethnic_Code            POSITION(126)      CHAR,
    Blood_Type             POSITION(127-129)  CHAR,
    Current_Height         POSITION(130-131)  INTEGER EXTERNAL,
    Current_Weight         POSITION(132-134)  INTEGER EXTERNAL,
    Pullups                POSITION(135-136)  INTEGER EXTERNAL,
    Sex                    POSITION(137)      CHAR,
    Race_Code              POSITION(138)      CHAR,
    Religion_Code          POSITION(139-140)  CHAR)
```

SQL*LOADER PROGRAM FOR 'PRIOR_SERVICE'

```
LOAD DATA
INFILE PRISERV.DAT
INTO TABLE PRIOR_SERVICE
( SSN                          POSITION(01-11)    CHAR,
    Prep_School_Name_Indic     POSITION(12-13)    CHAR,
    Service_Component          POSITION(14)       CHAR,
    Regular_Or_Res_Indic       POSITION(15)       CHAR,
    Service_Months             POSITION(16-17)    INTEGER EXTERNAL,
    Military_MOS               POSITION(18-22)    CHAR,
    Current_Active_Duty_Indic  POSITION(23)       CHAR,
    Citations_Received_Indic   POSITION(24)       CHAR,
    Wounds_Received_Indic      POSITION(25)       CHAR)
```

SQL*LOADER PROGRAM FOR ‘CUM_CADET_GRADES’

```
LOAD DATA
INFILE CUMGRADE.DAT
INTO TABLE CUM_CADET_GRADES
( SSN                            POSITION(01-11)   CHAR,
    Cumulative_AOM               POSITION(12-15)   INTEGER EXTERNAL,
    Cumulative_GOM               POSITION(16-19)   INTEGER EXTERNAL,
    Cumulative_Acad_Percentile   POSITION(20-23)   INTEGER EXTERNAL,
    Cumulative_Gen_Percentile    POSITION(24-27)   INTEGER EXTERNAL,
    Cumulative_Acad_Credit_Hrs   POSITION(28-32)   INTEGER EXTERNAL,
    Cumulative_Gen_Credit_Hrs    POSITION(33-37)   INTEGER EXTERNAL,
    Cumulative_Acad_Quality_Pts  POSITION(38-43)   INTEGER EXTERNAL,
    Cumulative_Acad_QPA          POSITION(44-47)   INTEGER EXTERNAL,
    Cumulative_Gen_QPA           POSITION(48-51)   INTEGER EXTERNAL,
    Cumulative_Gen_Quality_Pts   POSITION(52-57)   INTEGER EXTERNAL,
    Final_Term_Flag              POSITION(58)      CHAR,
    CQPA_Probation_Flag          POSITION(59)      CHAR)
```

SQL*LOADER PROGRAM FOR ‘EARNS_GRADE_IN’

```
LOAD DATA
INFILE EARNGRAD.DAT
INTO TABLE EARNS_GRADE_IN
( SSN                           POSITION(01-11)    CHAR,
    Course_Prefix               POSITION(12-13)    CHAR,
    Course_Number               POSITION(14-16)    CHAR,
    Course_Suffix               POSITION(17)       CHAR,
    Year                        POSITION(18-19)    INTEGER EXTERNAL,
    Term                        POSITION(20)       INTEGER EXTERNAL,
    Course_Elective_Flag        POSITION(21)       CHAR,
    Enrollment_Type             POSITION(22)       CHAR,
    Cum_Marks                   POSITION(23-27)    INTEGER EXTERNAL,
    Average                     POSITION(28-31)    INTEGER EXTERNAL,
    Letter_Grade                POSITION(32-33)    CHAR,
    Order_Of_Merit              POSITION(34-37)    INTEGER EXTERNAL,
    TEE_Cum_Marks               POSITION(38-42)    INTEGER EXTERNAL,
    TEE_Average                 POSITION(43-46)    INTEGER EXTERNAL,
    Course_Percentile           POSITION(47-50)    INTEGER EXTERNAL,
    Grades_Per_Day              POSITION(51-52)    INTEGER EXTERNAL,
    Grades_Per_Month            POSITION(53-54)    INTEGER EXTERNAL,
    Grades_Per_Year             POSITION(55-56)    INTEGER EXTERNAL,
    Hour                        POSITION(57)       CHAR)
```

SQL*LOADER PROGRAM FOR 'CADET'

```
LOAD DATA
INFILE CADET.DAT
INTO TABLE CADET
( SSN                           POSITION(01-11)    CHAR,
    Class_Year                  POSITION(12-13)    CHAR,
    Cadet_Alpha_Number          POSITION(14-18)    CHAR,
    Cadet_Short_Name_First_Half POSITION(19-35)    CHAR,
    Cadet_Short_Name_Second_Half POSITION(36-45)   CHAR,
    Separation_Flag             POSITION(46)       CHAR,
    Turn_Come_Back_Flag         POSITION(47)       CHAR,
    Deferred_Turnbk_Flag        POSITION(48)       CHAR,
    Term_End_Sep_Flag           POSITION(49)       CHAR,
    Permanent_Company           POSITION(50)       CHAR,
    Permanent_Regiment          POSITION(51)       CHAR,
    First_Company               POSITION(52)       CHAR,
    First_Regiment              POSITION(53)       CHAR,
    Second_Company              POSITION(54)       CHAR,
    Second_Regiment             POSITION(55)       CHAR,
    Crse_Prereq_Check           POSITION(56)       CHAR,
    Crse_Graduation_Check       POSITION(57)       CHAR,
    Field_Of_Study_Check        POSITION(58)       CHAR,
    Area_Identifier             POSITION(59)       CHAR,
```

SQL*LOADER PROGRAM FOR 'CADET' (Cont'd)

```
Field_Identifier                    POSITION(60)        CHAR,
Sub_Field_Identifier                POSITION(61)        CHAR,
Assign_Eval_Flag                    POSITION(62)        CHAR,
Assign_Airborne_Flag                POSITION(63)        CHAR,
Assign_Ranger_Flag                  POSITION(64)        CHAR,
Assign_Med_Qual_Code                POSITION(65)        CHAR,
Assign_APFT_Score                   POSITION(66-68)     INTEGER EXTERNAL,
Assign_Run_Time                     POSITION(69-72)     INTEGER EXTERNAL,
Assign_Chinups                      POSITION(73-74)     INTEGER EXTERNAL,
Con_Or_Walk_Flag                    POSITION(75)        CHAR,
Demerits_Conduct_Flag               POSITION(76)        CHAR,
Academic_Advisor_Rank               POSITION(77-80)     CHAR,
Academic_Advisor_Name               POSITION(81-107)    CHAR,
Academic_Advisor_Dept               POSITION(108-111)   CHAR,
Grade_Report_Flag                   POSITION(112)       CHAR,
Sponsor_Rank                        POSITION(113-116)   CHAR,
Sponsor_Name                        POSITION(117-133)   CHAR,
Sponsor_Dept                        POSITION(134-137)   CHAR,
Act_Participation_Category          POSITION(138)       CHAR,
Plebe_Parent_Weekend_Pos_Held       POSITION(139-141)   CHAR,
Mail_Box_Number                     POSITION(142-145)   CHAR)
```

SQL*LOADER PROGRAM FOR ‘NON_CADET‘

```
LOAD DATA
INFILE NONCDT.DAT
INTO TABLE NON_CADET
( SSN                                POSITION(01-11)    CHAR,
     Individual_File_Status           POSITION(12)       CHAR,
     Individual_Status_Elaboration    POSITION(13)       CHAR,
     Individual_Status_Authority      POSITION(14)       CHAR,
     Individual_Status_Date           POSITION(15-18)    CHAR,
     Offer_Of_Admission_Date          POSITION(19-22)    CHAR,
     Status_Elaboration_Date          POSITION(23-26)    CHAR,
     Academic_Evaluation_Status       POSITION(27)       CHAR,
     Academic_Quality_Zone            POSITION(28)       CHAR,
     Physical_Aptitude_Status         POSITION(29)       CHAR,
     Physical_Aptitude_Quality_Zone   POSITION(30)       CHAR,
     Medical_Evaluation_Status        POSITION(31)       CHAR,
     Medical_Quality_Zone             POSITION(32)       CHAR,
     Leadership_Evaluation_Status     POSITION(33)       CHAR,
     Leadership_Quality_Zone          POSITION(34)       CHAR,
     Med_Waiver_Status                POSITION(35)       CHAR,
     Name_Individual                  POSITION(36-62)    CHAR,
     First_Address_Line               POSITION(63-90)    CHAR,
     Second_Address_Line              POSITION(91-118)   CHAR,
```

SQL*LOADER PROGRAM FOR 'NON_CADET'(Cont'd)

```
Address_City              POSITION(119-135)  CHAR,
Address_State             POSITION(136-137)  CHAR,
Address_Zip_Code          POSITION(138-146)  CHAR,
Telephone_Number          POSITION(147-156)  CHAR,
Recruit_Pgm_Code          POSITION(157-158)  CHAR,
Sex                       POSITION(159)      CHAR,
Height                    POSITION(160-161)  CHAR,
Weight                    POSITION(162-164)  CHAR,
Ethnic_Background         POSITION(165)      CHAR,
Race                      POSITION(166)      CHAR,
Birth_Year                POSITION(167-168)  INTEGER EXTERNAL,
Birth_Month               POSITION(169-170)  INTEGER EXTERNAL,
Birth_Day                 POSITION(171-172)  INTEGER EXTERNAL,
State_Of_Domicile         POSITION(173-174)  CHAR,
District_Of_Residence     POSITION(175-176)  CHAR,
USMA_Geneology            POSITION(177)      CHAR,
Parent_Academy            POSITION(178)      CHAR,
Sibling_Academy           POSITION(179)      CHAR,
Prior_Active_Duty         POSITION(180)      CHAR,
Current_Active_Duty       POSITION(181)      CHAR,
Transcript_Grad_Year      POSITION(182-183)  CHAR,
Ent_Appointment_State     POSITION(184-185)  CHAR,
```

SQL*LOADER PROGRAM FOR ‘NON_CADET‘ (cont)

```
Ent_Senator_Or_District_No       POSITION(186-187)  CHAR,
Ent_Source_Sequence_No           POSITION(188)      CHAR,
Ent_Nomination_Type              POSITION(189)      CHAR,
Number_Of_Nominations            POSITION(190)      INTEGER EXTERNAL,
Record_Source_Of_Creation        POSITION(191)      CHAR,
Record_Creation_Date             POSITION(192-195)  CHAR,
Record_Last_Update_Date          POSITION(196-199)  CHAR,
Whole_Candidate_Score            POSITION(200-203)  INTEGER EXTERNAL,
College_Entrance_Exam_Rank       POSITION(201-206)  INTEGER EXTERNAL,
Academic_Supplement_Score        POSITION(207-209)  INTEGER EXTERNAL,
PAE_Score                        POSITION(210-212)  INTEGER EXTERNAL,
PAE_Score2                       POSITION(213-215)  INTEGER EXTERNAL,
PAE_Score3                       POSITION(216-218)  INTEGER EXTERNAL,
PAE_Source_Code                  POSITION(219)      CHAR,
Leadership_Potential_Score       POSITION(220-222)  INTEGER EXTERNAL,
Qualified_Alternate_Score        POSITION(223-226)  INTEGER EXTERNAI.,
File_Evaluation_Score            POSITION(227-229)  INTEGER EXTERNAL,
CEER_Source                      POSITION(230)      CHAR,
PAE_Adjustment_Score             POSITION(231-233)  INTEGER EXTERNAL,
Qualified_Alt_Adjustment_Score   POSITICN(234-236)  INTEGER EXTERNAL,
CEER_Adjustment_Score            POSITION(237-239)  INTEGER EXTERNAL,
LPS_Adjustment_Score             POSITION(240-242)  INTEGER EXTERNAL,
```

SQL*LOADER PROGRAM FOR 'NON_CADET' (cont)

```
Whole_Cand_Adjust_Score        POSITION(243-245)  INTEGER EXTERNAL,
Retention_Index                POSITION(246-248)  INTEGER EXTERNAL,
College_Transcript_Flag        POSITION(249)      CHAR,
Prep_School_Name_Code          POSITION(250)      CHAR,
Percent_Onto_College           POSITION(251-253)  CHAR,
ADM_Officer_Eval_Score         POSITION(254-257)  INTEGER EXTERNAL,
ADM_Committee_Eval_Score       POSITION(258-261)  INTEGER EXTERNAL,
Acad_Bd_Eval_Score             POSITION(262-265)  INTEGER EXTERNAL,
Work_Experience_Years          POSITION(266)      INTEGER EXTERNAL,
Work_Hours_Per_Week            POSITION(267-268)  INTEGER EXTERNAL,
Work_Experience_Type           POSITION(269)      INTEGER EXTERNAL,
Extracurric_Activities_Score   POSITION(270-272)  INTEGER EXTERNAL,
Athletic_Activities_Score      POSITION(273-275)  INTEGER EXTERNAL,
Faculty_Appraisal_Score        POSITION(276-278)  INTEGER EXTERNAL,
High_School_Class_Rank_Score   POSITION(279-281)  INTEGER EXTERNAL,
College_Board_Avg              POSITION(282-284)  INTEGER EXTERNAL,
Compensating_Evidence          POSITION(285-288)  INTEGER EXTERNAL,
LC_Score                       POSITION(289-291)  INTEGER EXTERNAL,
Class_Rank_Readjustment        POSITION(291-292)  INTEGER EXTERNAL,
Class_Rnk_Readj_Reason         POSITION(293)      INTEGER EXTERNAL,
Preliminary_SAT_Verbal         POSITION(294-295)  INTEGER EXTERNAL,
Preliminary_SAT_Math           POSITION(296-297)  INTEGER EXTERNAL,
```

SQL*LOADER PROGRAM FOR 'NON_CADET' (cont)

```
Nominational_Assistance         POSITION(298)       CHAR,
USMA_Application_History        POSITION(299)       CHAR,
Prep_School_Entrance_Final      POSITION(300)       CHAR,
Prep_School_Recruit_Pop         POSITION(301)       CHAR,
Applicant_AO_Code               POSITION(302-303)   CHAR,
Applicant_State_Code            POSITION(304-305)   CHAR,
Applicant_Area_Code             POSITION(306)       CHAR,
Applicant_Position_Code         POSITION(307-308)   CHAR,
Applicant_Test_Site_Code        POSITION(309-312)   CHAR,
Physical_Aptitude_Exam_Type     POSITION(313)       CHAR,
Interview_On_File               POSITION(314)       CHAR,
Cand_Pers_Stmt                  POSITION(315)       CHAR,
Employers_Evaluation            POSITION(316)       CHAR,
Activities_Rec_DD_1868          POSITION(317)       CHAR,
Pers_Data_Rec_DD_1867           POSITION(318)       CHAR,
School_Official_Eval_Count      POSITION(319)       INTEGER EXTERNAL,
Force_Summary_Sheet             POSITION(320)       CHAR,
HS_Transcript_Request           POSITION(321)       CHAR,
LOA_LOE_Code                    POSITION(322)       CHAR,
Special_Letter_Two              POSITION(323)       CHAR,
DODMERB_Notification_Flag       POSITION(324)       CHAR,
WCS_Change_Flag                 POSITION(325)       CHAR,
```

SQL*LOADER PROGRAM FOR ‘NON_CADET‘ (cont)

```
Birth_Certificate               POSITION(326)      CHAR,
Parent_Consent_Form             POSITION(327)      CHAR,
SOE_From_Coach_PE               POSITION(328)      CHAR,
SOE_From_Counselor              POSITION(329)      CHAR,
SOE_From_Other                  POSITION(330)      CHAR,
Academic_Status_Date            POSITION(331-334)  CHAR,
Physical_Aptitude_Status_Date   POSITION(335-338)  CHAR,
Medical_Status_Date             POSITION(339-342)  CHAR,
Leadership_Status_Date          POSITION(343-346)  CHAR,
Second_Step_Kit_Sent_Date       POSITION(347-350)  CHAR,
Date_5_413_And_5_480            POSITION(351-354)  CHAR,
Special_Letter_One_Date         POSITION(355-358)  CHAR,
Special_Letter_Two_Date         POSITION(359-362)  CHAR,
Address_Change_Flag             POSITION(363)      CHAR,
Special_Report_Code1            POSITION(364)      CHAR,
Special_Report_Code2            POSITION(365)      CHAR,
Special_Report_Code3            POSITION(366)      CHAR,
Special_Report_Code4            POSITION(367)      CHAR,
Special_Report_Code5            POSITION(368)      CHAR,
Special_Report_Code6            POSITION(369)      CHAR,
Physical_Aptitude_Resched       POSITION(370)      CHAR)
```

SQL*LOADER PROGRAM FOR 'TERM_CADET_GRADES'

```
LOAD DATA
INFILE TERMGRD.DAT
INTO TABLE TERM_CADET_GRADES
( SSN                              POSITION(01-11)   CHAR,
    Academic_Year                  POSITION(12-13)   INTEGER EXTERNAL,
    Academic_Term                  POSITION(14)      INTEGER EXTERNAL,
    Term_Academic_OM               POSITION(15-18)   INTEGER EXTERNAL,
    Term_General_OM                POSITION(19-22)   INTEGER EXTERNAL,
    Term_Academic_Percentile       POSITION(23-26)   INTEGER EXTERNAL,
    Term_General_Percentile        POSITION(27-30)   INTEGER EXTERNAL,
    Term_Academic_Quality_Pts      POSITION(31-35)   INTEGER EXTERNAL,
    Term_Academic_Credit_Hrs       POSITION(36-39)   INTEGER EXTERNAL,
    Term_Acad_QPA                  POSITION(40-44)   INTEGER EXTERNAL,
    Term_End_Graybk_Flag           POSITION(45)      CHAR,
    Term_Gen_QPA                   POSITION(46-49)   INTEGER EXTERNAL,
    Term_Gen_Quality_Pts           POSITION(50-54)   INTEGER EXTERNAL,
    Term_Gen_Credit_Hrs            POSITION(55-58)   INTEGER EXTERNAL,
    Term_Deans_List                POSITION(59)      CHAR,
    Deans_Graybk_Recomm_Code       POSITION(60-62)   CHAR,
    TQPA_Probation_Flag            POSITION(63)      CHAR,
    Year_Term_Active_Flag          POSITION(64)      CHAR)
```

SQL*LOADER PROGRAM FOR 'SERVICE_INFO'

```
LOAD DATA
INFILE SERVINFO.DAT
INTO TABLE SERVICE_INFO
( SSN                      POSITION(01-11)    CHAR,
    Parent_Name            POSITION(12-38)    CHAR,
    Parent_Serv_Rank       POSITION(39-42)    CHAR,
    Parent_Serv_Status     POSITION(43-44)    INTEGER EXTERNAL,
    Parent_Serv_Component  POSITION(45)       CHAR)
```

APPENDIX G

EXAMPLES OF ACTUAL QUERIES USED IN THE CURRENT DBMS

ADMISSIONS:

1. List Social Security Number, Name, Medical Waiver Status, Parent's Academy and Parent's Graduation Date (if applicable), Basic Exam Scores, and Report Status Flags concerning cadet candidates of a particular year group who have been accepted for admission.

2. List the name, SSN, title, and address of a particular Admissions Participant as determined by his identification scheme.

3. List the civilian employer and report indicators for a particular admissions participant as determined by his identification scheme.

4. List name, SSN, medical status, special report indicators 1-6, and race of applicants for particular class years who have various combinations of report statuses.

5. List admissions participant title, name, area of operations, state, area code, position code, and duty indicator for all admissions participants sorted on name, code, and state.

6. List name, SSN, nomination type, number of nominations, and medical evaluation status for applicants of a particular class year who have particular file statuses.

COMMANDANT

1. List all demerit information about a particular cadet(s) for some specific time frame (year/month/day), along with time period specific information(i.e. monthly special penalty tours,etc..). Also list out any comments included for these offenses.

2. List yearly special demerits/penalty tours and monthly special demerits/penalty tours for all cadets who have any of these offenses.

3. List all extracurricular activities in which a particular cadet has participated in during his/her time as a cadet.

4. List study periods, half days used/auth, profiles for a particular commandants year and for a particular cadet.

5. List name, company, detail position for all cadets of a certain rank during a particular detail period, sorted on company.

6. List SSN, cadet sports rating, medical evaluation status, and ODIA sport code for a particular cadet.

DEAN

1. List course number, course percentage date, course section, course hour, course letter grade, cadet name and SSN for all courses in a particular academic term who have not submitted a grade since a particular date.

2. List name, course number, course average, course order of merit, and course letter grade for all cadets taking a Physical Education (PE) course in some designated academic term.

3. List name, SSN, company, graduation year, course number, section, hour, cumulative QPA, field of study, and academic year/term for all cadets attending some course.

4. List cadet name, company, SSN, field of study, cadet activity, and graduation year for cadets in particular fields of study.

5. List cadet name, SSN, company, graduation year, field of study, and cumulative QPA for a particular cadet graduating class and a particular academic term, with the option of restricting the output to those cadets over some specified QPA level.

6. List the name, SSN, graduation year, and course number for cadets who will be December graduates (graduate a term behind their original class).

7. List name, sex, course number, section, hour, cumulative QPA, course letter grade, and academic year/term for those cadets taking a particular course during a particular academic term.

8. List cadet name, SSN, company, current weight, entrance swim classification, and PE section /hour for all cadets of a particular class year.

9. List the cadet name, graduation year, SSN, company, course number, course section/hour, and cumulative QPA of the previous term for a particular course and term.

10. List cadet name, SSN, company, graduation year, military development cumulative index and order of merit, cumulative academic and general QPA, and academic year/term for all cadets in a particular class year, a particular academic year/term, and a particular commandant year and detail period.

11. List cadet name, SSN, graduation year, company, course number and section for all cadets taking courses in a particular area for a particular academic year/term.

12. List the course number and course description for all courses being offered for a particular academic year/term.

13. List cadet name, SSN, company, and graduation year for all cadets in a given range of graduation years where their father attended USMA as a member of a certain class.

APPENDIX H

PROTOTYPE USERS' GUIDE

This manual is the user's gateway into the Relational West Point Data Base Management System, the academy's master database system. Any information that is maintained on the cadets, courses which they take, or classrooms used for those courses, is available through this user friendly interface. The manual is broken down into the following four major sections: General Overview, System Requirements, Program Operation, and Tutorial.

The General Overview section is intended to give the user a general idea of what to expect from the system. Information about hardware and software requirements are included in the System Requirements section. The Program Operation section gives the user some basic information about the system. Information on how to start and stop the application, as well as global keystroke information, is included. The Tutorial section, perhaps the most important section for the new user, leads the user step by step through the use of the three major subsystems of the application.

This manual assumes that the user has participated in his section's training session on the Oracle DBMS. Continuing with this manual without this training may cause some confusion on the part of the user.

A. GENERAL OVERVIEW AND SYSTEM REQUIREMENTS

Two major classes of users were designed into the prototype. The first class of user is the general user; this user requires only the ability to retrieve information from the database. In the prototype this user has an application name of "GENUSE", and a username/password combination of "GENUSE/GENUSE". The second class of user needs the ability not only to retrieve information, but also to insert/update information in the database. This user, generally, is a member of one of the following offices: the Dean's office, the Admission's office, or the Commandant's office. For the prototype, the application name, that has been implemented, for this class of user is "DEAN" and the username/password combination is "DEAN/DEAN". Note that the application name and username/password for both the Admission's and Commandant's office class of users have not yet been implemented.

The West Point Data Base Management System (WPDBMS) is divided into three major subsystems (see Figure H.1). The first is the retrieval of data using prepared queries. This subsystem is designed for the repetitive information requests which do not change very much from usage to usage. For example, when checking if all grades have been turned in, only six variables change from use to use. It is much easier to enter these variables in a form then it is to rewrite the database request each time the query is to be performed! The user is not required to know anything about the internal operations of the database, just the information which he desires.

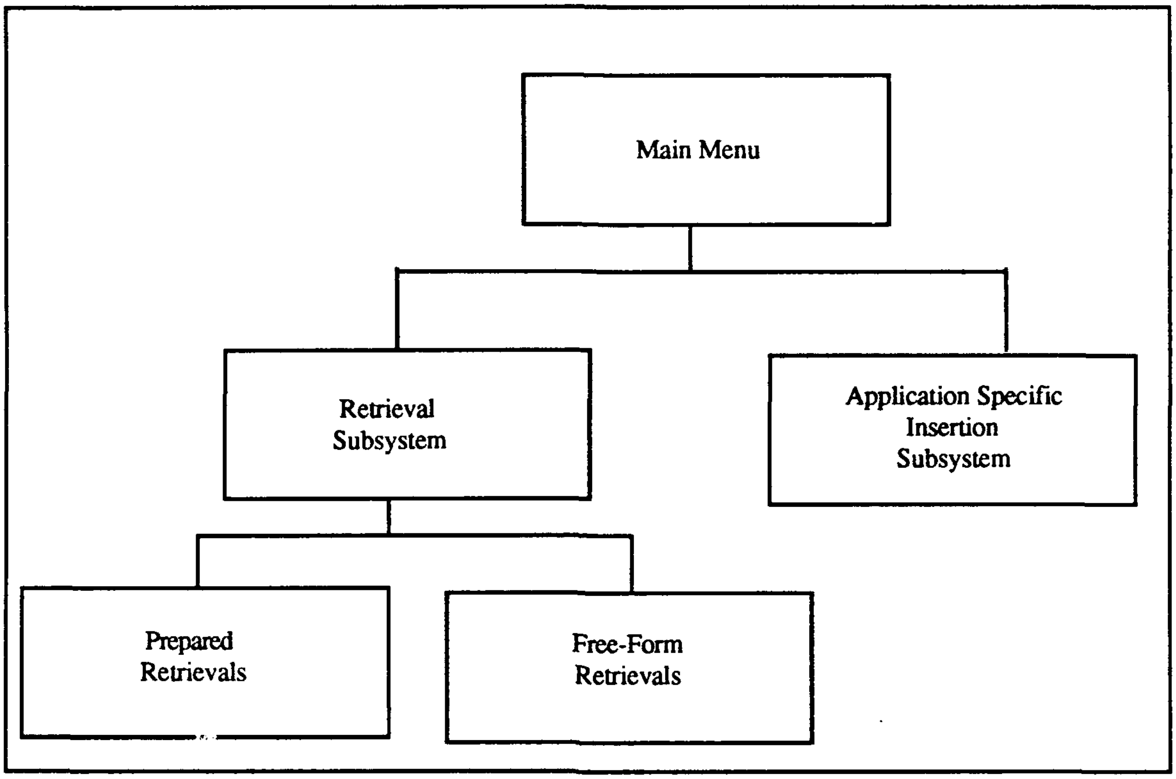


Figure H.1 General Overview of the Prototype Application

The second major subsystem is the retrieval of information using a "free-form" query. These retrieval forms allow the user to obtain the information on an entire area of the database at once. Once again, very little knowledge of the system is required, as a detailed menu system guides the user.

The last subsystem, the insertion subsystem, is the only subsystem which is capable of changing/inserting information in the WPDBMS. To provide an additional level of security, only certain "username/password" combinations are authorized access into this branch of the prototype. Users can only change fields for which they have authorization, as stated in USMA Regulation 25-5. Users are allowed to update existing information, or to add new information to the

'WPDBMS. This is accomplished through a series of forms very similar to the "free-form" retrieval subsystem discussed above.

If deletion of existing information within the WPDBMS is required, the only method to accomplish this is through the Data Base Administrator. This is to prevent the accidental deletion of information.

B. SYSTEM REQUIREMENTS

The current system has been developed and tested using an Austin 286 machine with an internal 40 MB hard drive, a VGA monitor, and MSDOS 4.01. The WPDBMS has also been tested using the EasyMenu menu system and a memory resident version of Sidekick.

1. System Hardware Requirements

An 80286 class AT compatible computer, with a minimum of three megabytes of extended memory is needed to run the Oracle software used to develop the prototype system. Additionally, a hard disk drive with more than ten megabytes of free space is required.

2. System Software Requirements

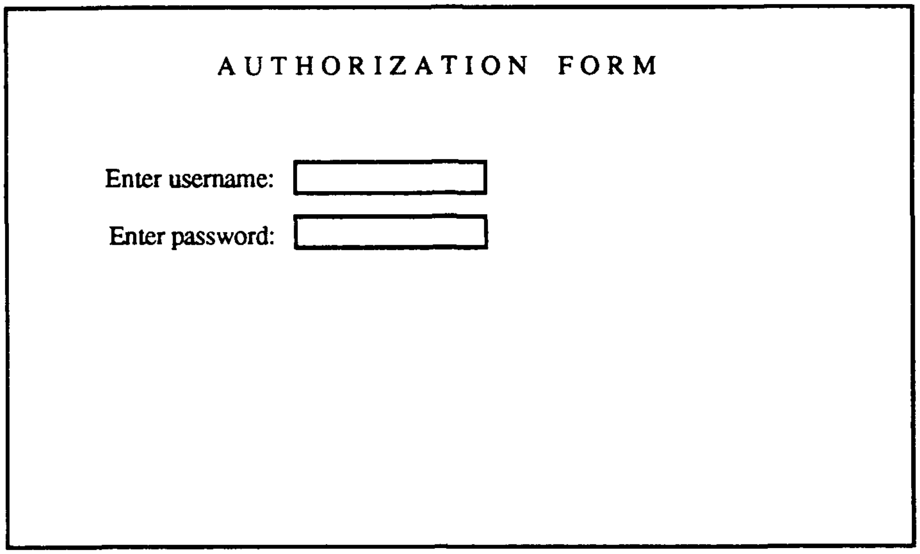
The following software is required to run the prototype: the WPDBMS application, the Oracle DBMS package -- version 5.1B Professional, and DOS 3.3 or higher. If you have any further questions about the WPDBMS application consult the DBA.

C. PROGRAM OPERATION

1. Starting the WPDBMS Application

When the power for the computer is turned on, the symbol "C:>" appears on the screen. The user must then type "cracle" followed by a carriage return (<CR>), in order to bring the protected Oracle kernel into extended memory. It is important to note that the process of bringing the protected Oracle kernel into extended memory is only done upon the first start up of the day. The system wili not function properly if an attempt to execute this program is made after the kernel has already been created. Executing the "oracle" program twice will not harm the database, just generate an error message and return the user to the DOS prompt.

Once the protected kernel is in place, the user accesses the prototype by typing "sqlmenu <application_name>" and either just a carriage return "<CR>" or his "username/password" followed by a "<CR>". Simply typing the "<CR>" will cause the Authorization Form in Figure H.2 to be displayed. Note that the figures that represent screens from the prototype are not true to size, but display the same information, in much the same manner, as the actual prototype screens.



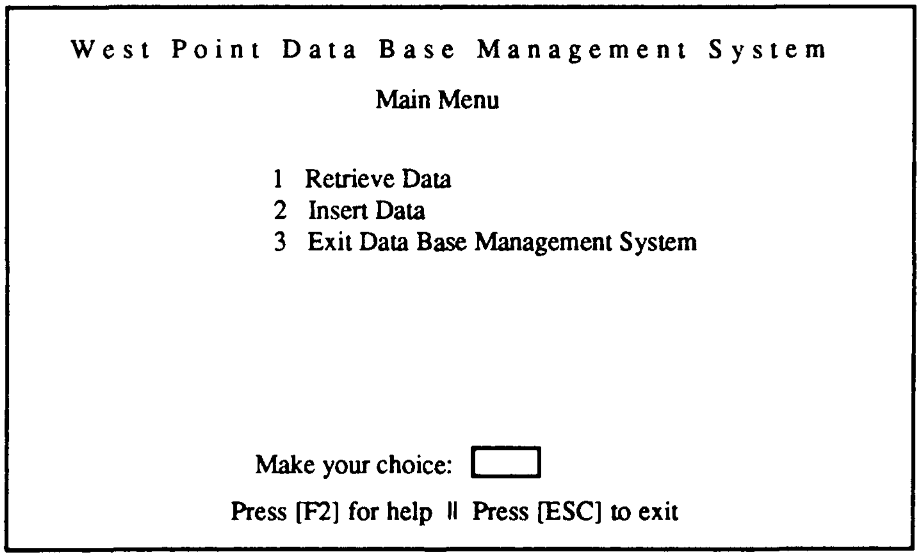
AUTHORIZATION FORM

Enter username: □

Enter password: □

Figure H.2 Authorization Form for Access to the Prototype

The user then enters the username and password provided by the system administrator, in order to enter the WPDBMS. Or, if the "username/password <CR>" is entered at the DOS prompt, the Authorization Form is bypassed and the Main Menu of the WPDBMS, see Figure H.3, is displayed.



West Point Data Base Management System

Main Menu

1 Retrieve Data
2 Insert Data
3 Exit Data Base Management System

Make your choice: □

Press [F2] for help || Press [ESC] to exit

Figure H.3 Main Menu for the Prototype

2. Exiting the WPDBMS Application

Once the user has completed using the WPDBMS application, he must follow the instructions displayed at the bottom of the screen to exit the system. At the Main Menu of the WPDBMS application, the user exits the prototype by selecting the menu item "3". Pressing this menu item returns the user to the DOS prompt. This procedure is all the user will normally need to do to exit the WPDBMS application.

If the power for the system is to be turned off, however, the following additional steps are required: type "ior s <CR>" to shut down the Oracle DBMS, and type "remora all <CR>" to remove Oracle from extended memory. Although no damage may occur if these steps are not taken, there is no guarantee that all database actions will be preserved, or that the Oracle database will not be corrupted. The bottom line is DO IT!!!

3. Global Keys

There are several function keys which do not change from module to module, but maintain their functionality throughout the entire WPDBMS application. The global keys are:

[F1] This key shows the currently active function keys. Note that due to restrictions imposed by Oracle, the screen presented is not redefinable. Therefore, some of the key assignments presented on this screen may not be valid. Refer to the current screen's help screen for accurate information.

[F2] This key causes the help screen for the current user screen to be displayed. When in query mode, however, this key will only bring up a default help line.

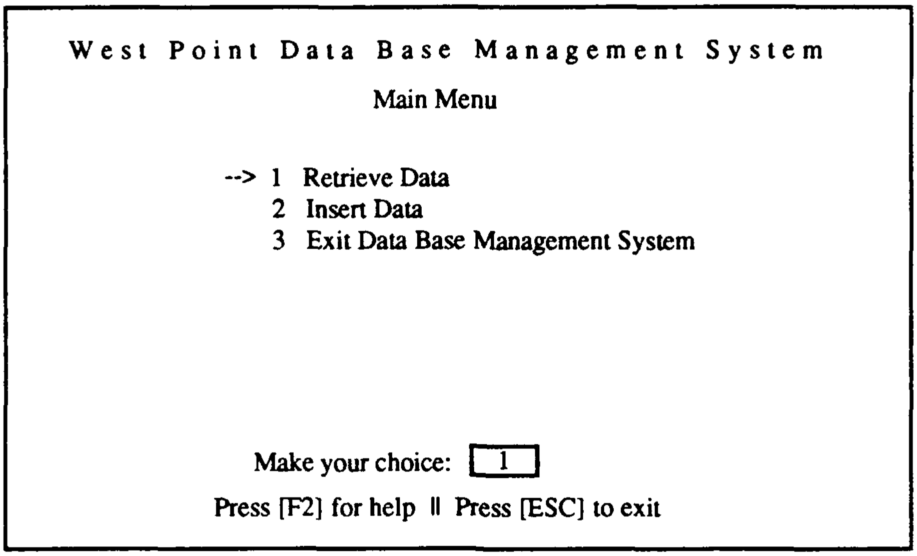
[ESC] This key takes the user to two different places, depending where the user is when the key is pressed. If the user is in a form, he will be returned to the previous menu. If the user is in a menu, on the other hand, this key will exit the WPDBMS.

D. TUTORIAL

This section steps the user through retrieval of data using prepared and free-form queries, using the "DEAN" application. Also, insertion and update queries will be walked-through.

1. Prepared Query Data Retrieval

We will now step through an example of a user performing a prepared data retrieval query of information. At the Main Menu screen, of the prototype, the user has three choices: to retrieve data, to insert data, or to exit the system. For this example the user desires to retrieve data, so a "1", followed by a carriage return, is typed in the box following "Make your choice" at the bottom of the screen (as shown in Figure H.4). Or the user may choose to use cursor keys to indicate his selection, and then press the carriage return.



West Point Data Base Management System

Main Menu

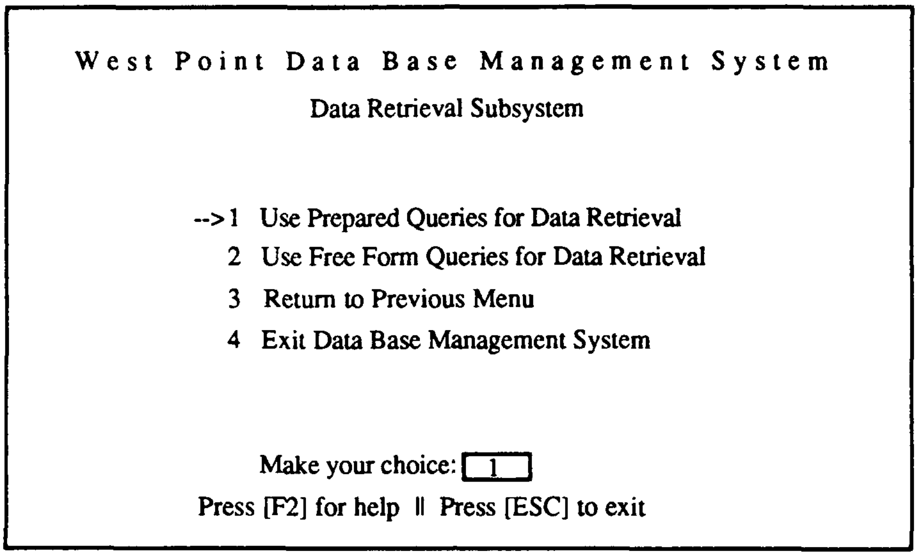
--> 1 Retrieve Data
2 Insert Data
3 Exit Data Base Management System

Make your choice: 1

Press [F2] for help || Press [ESC] to exit

Figure H.4 Main Menu for West Point Prototype

The system now displays the Data Retrieval Subsystem menu depicted in Figure H.5. This menu allows the user four options. The first option, using prepared queries for data retrieval, will be used when the desired query is one that is used often and is on the list of queries the DBA has stored in the system. The second option, using free form queries for data retrieval, will be selected when the user has an infrequent query to perform. These free form queries are designed for the user with very limited, if any, knowledge of sequel (the relational database query language used by Oracle). The queries consist of straight-forward, fill-in-the-blank forms. If the user decides that he wants to do an insert instead of a retrieval, he can choose option 3 and return to the previous menu. Or, if he decides that he does not want to perform any queries at all, he can choose option 4 and exit the system entirely. In this case, the user chooses to use a prepared query for data retrieval and selects option 1 by typing a "1", followed by a carriage return, in the box at the bottom of the screen. Again, the user may choose to use cursor keys to indicate his selection, and then press the carriage return.



West Point Data Base Management System

Data Retrieval Subsystem

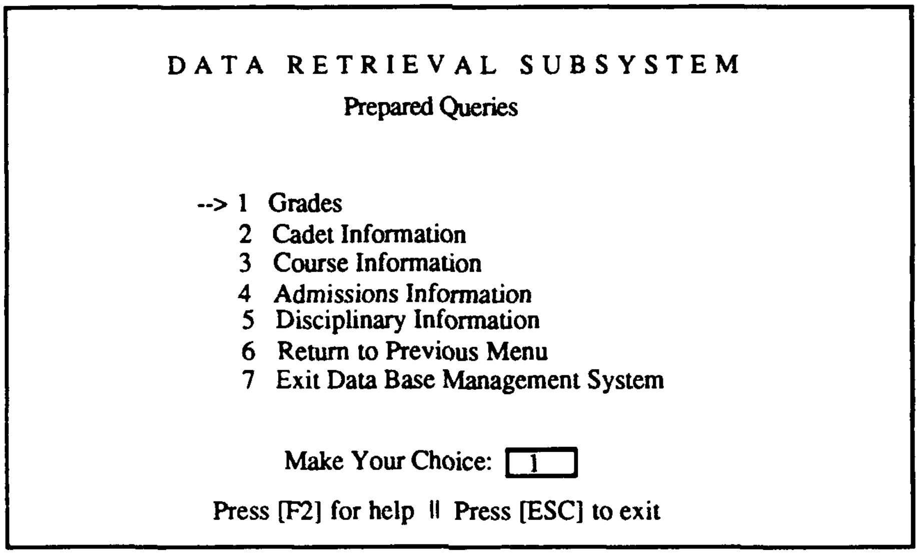
-->1 Use Prepared Queries for Data Retrieval
2 Use Free Form Queries for Data Retrieval
3 Return to Previous Menu
4 Exit Data Base Management System

Make your choice: 1

Press [F2] for help || Press [ESC] to exit

Figure H.5 Data Retrieval Subsystem Menu

The Prepared Queries menu, shown in Figure H.6, now appears on the screen. This menu allows the user to select from any one of five different logical groups of prepared queries, to return to the previous menu, or to exit the system. In this example, the user requires grades information and either indicates his choice with the cursor key followed by a carriage return, or selects option 1 by typing a "1" and a carriage return, in the box at the bottom of the screen.



```
DATA RETRIEVAL SUBSYSTEM
Prepared Queries

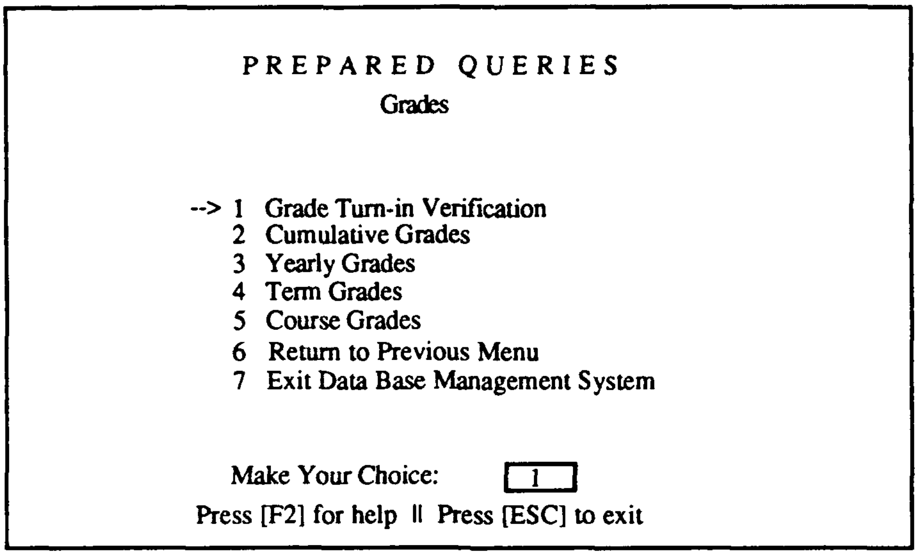
--> 1 Grades
    2 Cadet Information
    3 Course Information
    4 Admissions Information
    5 Disciplinary Information
    6 Return to Previous Menu
    7 Exit Data Base Management System

Make Your Choice: [ 1 ]

Press [F2] for help || Press [ESC] to exit
```

Figure H.6 Data Retrieval Subsystem Menu for Prepared Queries

The Grades Prepared Queries menu, Figure H.7, is now displayed. This menu allows the user to select from five different logical groups of prepared grades queries, to return to the previous menu, or to exit the system. At this point, the user can press the [F2] key for help and the English version of the currently selected query will be displayed. In this example, the user desires grades turn-in information, and selects option 1 by typing a "1" and a carriage return, in the box at the bottom of the screen. Or the user may choose to use cursor keys followed by a carriage return, to indicate his selection.



PREPARED QUERIES
Grades

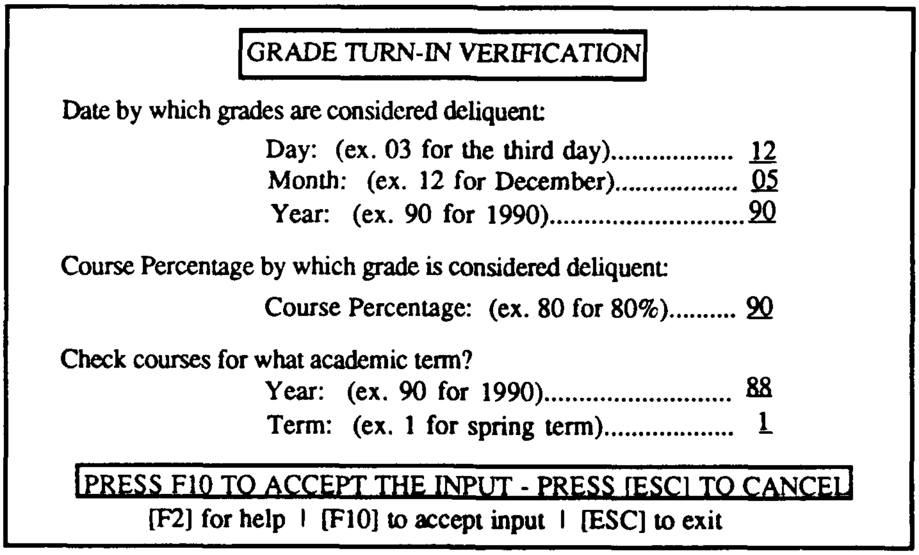
--> 1 Grade Turn-in Verification
2 Cumulative Grades
3 Yearly Grades
4 Term Grades
5 Course Grades
6 Return to Previous Menu
7 Exit Data Base Management System

Make Your Choice: 1

Press [F2] for help || Press [ESC] to exit

Figure H.7 Prepared Queries for Grades Information

The Grade Turn-in Verification, Figure H.8, now appears. This form allows the user to input the date, course percentage, and year and term desired to produce the required report of delinquent grades. Each field is self-explanatory as to how the data must be entered.



GRADE TURN-IN VERIFICATION

Date by which grades are considered deliquent:
Day: (ex. 03 for the third day).................. 12
Month: (ex. 12 for December).................. 05
Year: (ex. 90 for 1990)............................ 90

Course Percentage by which grade is considered deliquent:
Course Percentage: (ex. 80 for 80%).......... 90

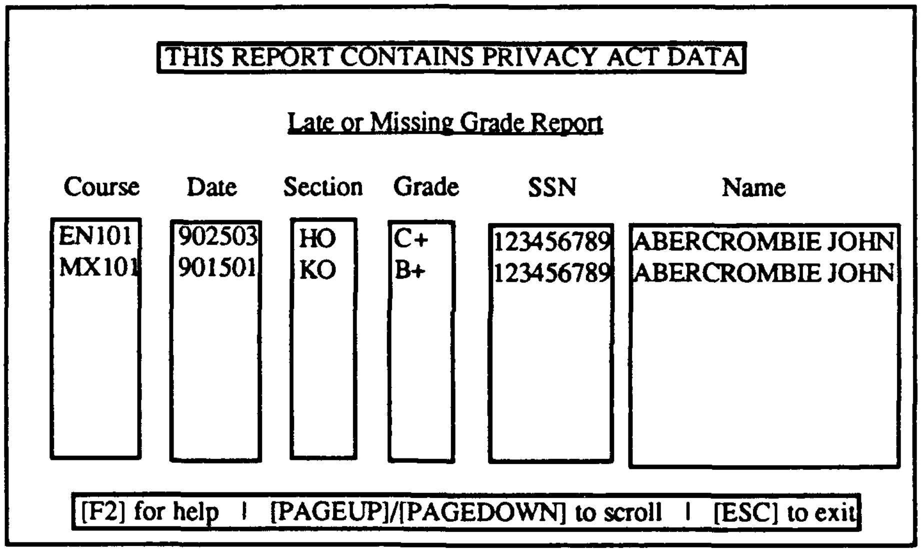
Check courses for what academic term?
Year: (ex. 90 for 1990)........................... 88
Term: (ex. 1 for spring term).................. 1

PRESS F10 TO ACCEPT THE INPUT - PRESS [ESC] TO CANCEL

[F2] for help | [F10] to accept input | [ESC] to exit

Figure H.8 Grade Turn-in Verification Information Form

After all the information for the Grade Turn-in Verification report has been entered and [F10] has been pressed, the message "-- Press RETURN to return to SQL*Forms --" is displayed. Press the return key, and the report shown in Figure H.9 is displayed. A maximum of ten records will be displayed at any one time. The user may then scroll up and down the list of the remainder of the retrieved records. In accordance with the Privacy Act, the individual's social security number has been changed.



```
              THIS REPORT CONTAINS PRIVACY ACT DATA

                  Late or Missing Grade Report

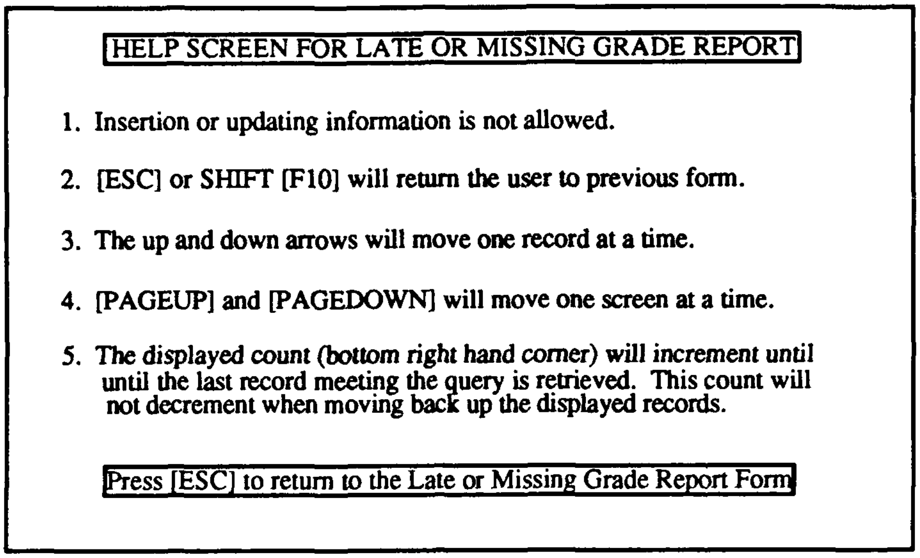
Course   Date    Section  Grade     SSN               Name

EN101    902503  HO       C+     123456789   ABERCROMBIE JOHN
MX101    901501  KO       B+     123456789   ABERCROMBIE JOHN

 [F2] for help  |  [PAGEUP]/[PAGEDOWN] to scroll  |  [ESC] to exit
```

Figure H.9 Late or Missing Grade Report

The user can now press the [F2] key and the Help Screen for the Late or Missing Grade Report, shown in Figure H10, will be displayed.



HELP SCREEN FOR LATE OR MISSING GRADE REPORT

1. Insertion or updating information is not allowed.
2. [ESC] or SHIFT [F10] will return the user to previous form.
3. The up and down arrows will move one record at a time.
4. [PAGEUP] and [PAGEDOWN] will move one screen at a time.
5. The displayed count (bottom right hand corner) will increment until until the last record meeting the query is retrieved. This count will not decrement when moving back up the displayed records.

Press [ESC] to return to the Late or Missing Grade Report Form

Figure H.10 Help Screen for Late or Missing Grade Report

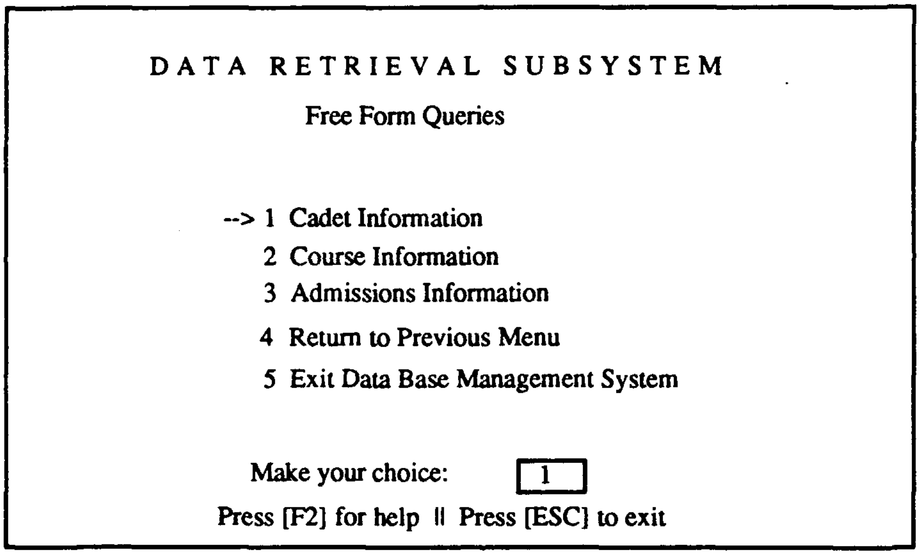
Pressing [ESC] once will display the message "-- Press RETURN to return to SQL*Forms --". Pressing the return key, followed by pressing the [ESC] key, will bring the user back to the Prepared Queries, Grades menu depicted in Figure H.7. Selecting the "Return to Previous Menu" option three times will bring the user back to the Main Menu screen for the WPDBMS, shown in Figure H.3.

Due to the limitations on the version of Oracle used to develop this prototype (version 5.1B trial), the user must exit Oracle and log back in to execute another prepared query. This limitation does not exist for the free-form or the insertion/update portion of the prototype, and should disappear entirely when implemented on Oracle version 6.0.

2. Free-Form Query Data Retrieval

If the user, on the other hand, wants to do a free-form query on retrieval of information, he again enters a "1" and carriage return at the Main

Menu displayed in Figure H.3. But, unlike the previous example, he then enters a "2" and carriage return at the Data Retrieval Subsystem Menu, in order to select the "Use Free Form Queries for Data Retrieval" option. This selection causes the Free Form Queries Menu (Figure H.11 below) to be displayed on the screen. The series of menus and forms that follow this option differ from those in the previous example of using a prepared query to retrieve data. The remaining sequence of steps takes the user through a series of menus and forms that have actually been implemented on the prototype. At the Free Form Queries Menu, the user selects option "1", to retrieve information about cadets.



DATA RETRIEVAL SUBSYSTEM

Free Form Queries

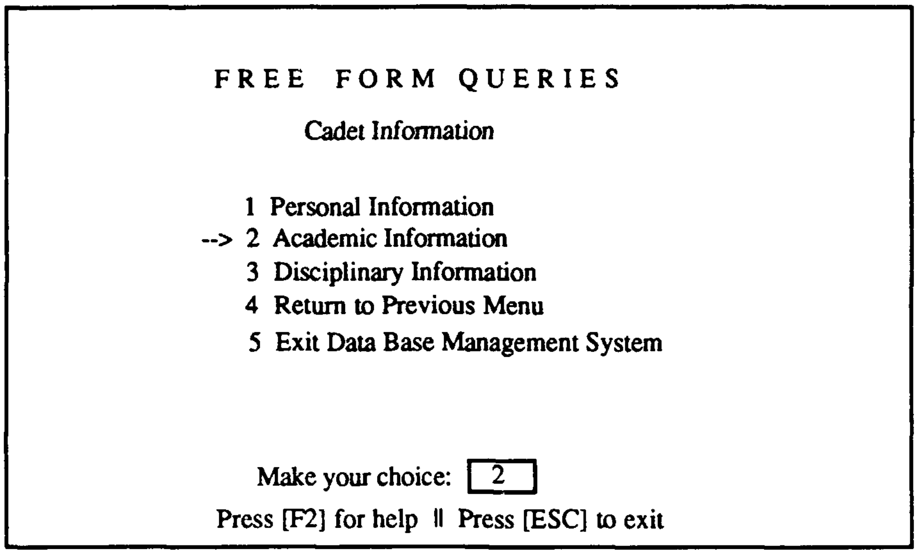
--> 1 Cadet Information
2 Course Information
3 Admissions Information
4 Return to Previous Menu
5 Exit Data Base Management System

Make your choice: 1

Press [F2] for help || Press [ESC] to exit

Figure H.11 Free-Form Queries

The Cadet Information Menu, portrayed in Figure H.12, then appears, and the user selects option "2" in order to get the "Academic Information" option.



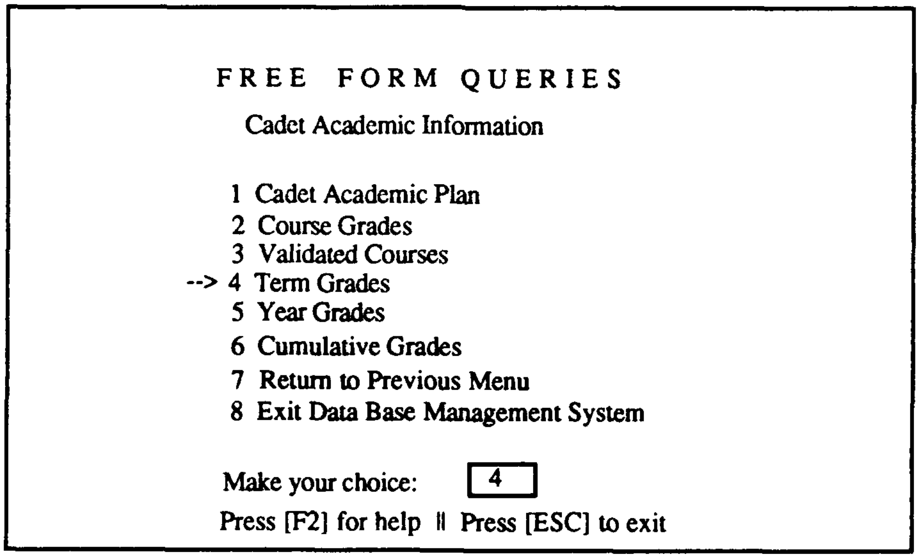
```
FREE FORM QUERIES
   Cadet Information

   1 Personal Information
-->2 Academic Information
   3 Disciplinary Information
   4 Return to Previous Menu
   5 Exit Data Base Management System


   Make your choice: [2]
Press [F2] for help || Press [ESC] to exit
```

Figure H.12 Cadet Information

Selecting option "2" on the Cadet Information Menu will then cause the Cadet Academic Information Menu (see Figure H.13) to be displayed. At this point, the user selects option "4", to receive Term Grades information.



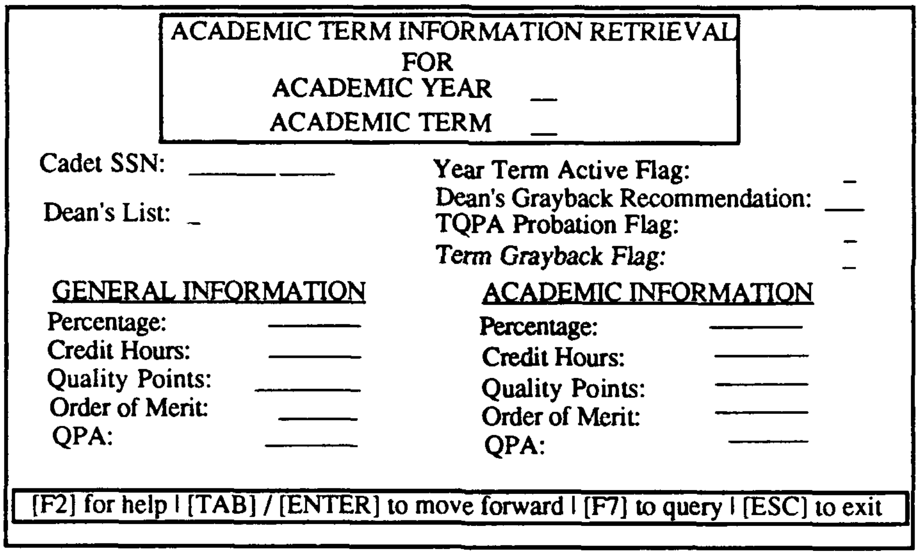
```
FREE FORM QUERIES
  Cadet Academic Information

   1 Cadet Academic Plan
   2 Course Grades
   3 Validated Courses
-->4 Term Grades
   5 Year Grades
   6 Cumulative Grades
   7 Return to Previous Menu
   8 Exit Data Base Management System

Make your choice:     [4]
Press [F2] for help || Press [ESC] to exit
```

Figure H.13 Cadet Academic Information

Next, a fill-in-the-blanks form, entitled Academic Term Information (displayed in Figure H.14), appears. The user then enters "90" in the Academic Year field, "01" in the Academic Term field, and ">3" in the Academic Information QPA field. Note that the [ENTER] or [SHIFT] [TAB] keys are used to move from field to field for entering data. This series of entries causes the information about all cadets with Quality Point Averages greater than 3.000 to appear on the form, one record at a time. The arrow keys may be used to scroll through the retrieved records.



ACADEMIC TERM INFORMATION RETRIEVAL
FOR
ACADEMIC YEAR __
ACADEMIC TERM __

Cadet SSN: ___________

Dean's List: _

Year Term Active Flag: _
Dean's Grayback Recommendation: __
TQPA Probation Flag: _
Term Grayback Flag: _

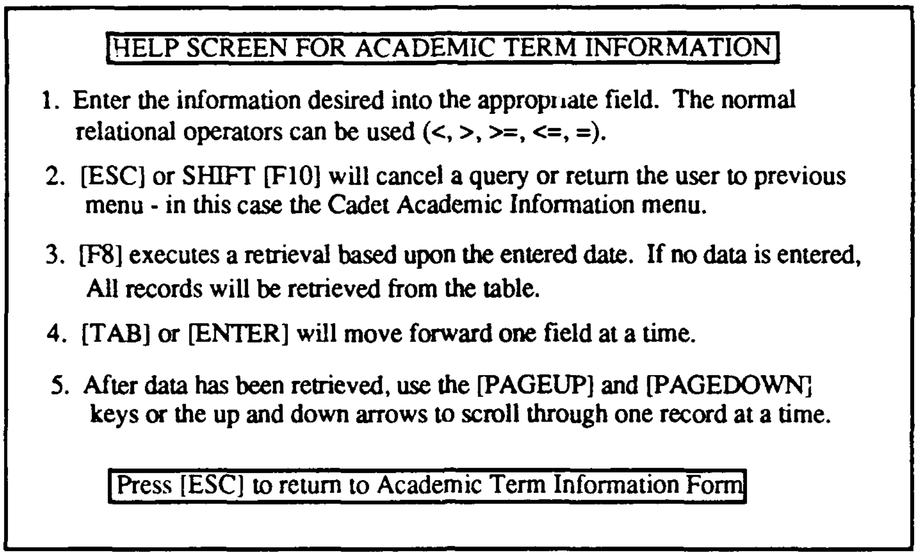
GENERAL INFORMATION
Percentage: _______
Credit Hours: _______
Quality Points: _______
Order of Merit: _______
QPA: _______

ACADEMIC INFORMATION
Percentage: _______
Credit Hours: _______
Quality Points: _______
Order of Merit: _______
QPA: _______

[F2] for help | [TAB] / [ENTER] to move forward | [F7] to query | [ESC] to exit

Figure H.14 Academic Term Information

At this point the user presses [F2] and the Help Screen for Academic Term Information, see Figure H.15, is displayed.



HELP SCREEN FOR ACADEMIC TERM INFORMATION

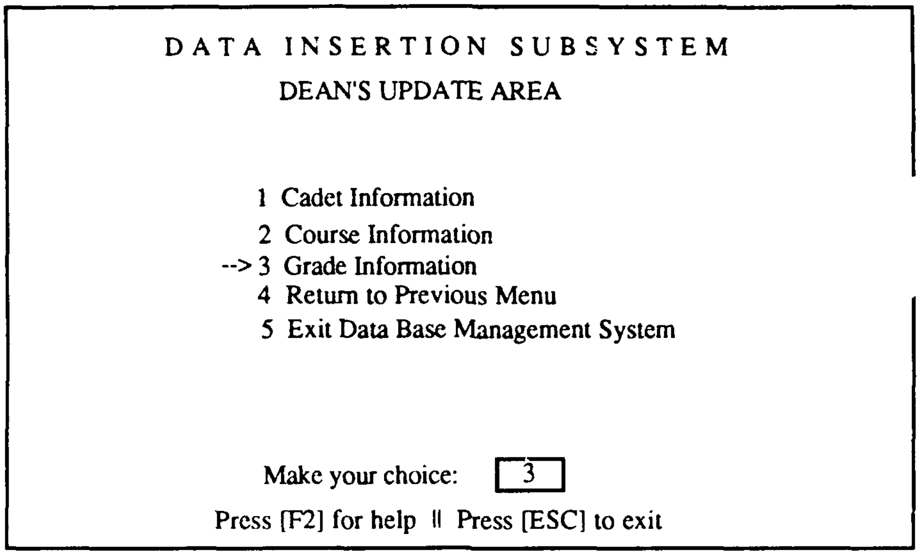
1. Enter the information desired into the appropriate field. The normal relational operators can be used (<, >, >=, <=, =).
2. [ESC] or SHIFT [F10] will cancel a query or return the user to previous menu - in this case the Cadet Academic Information menu.
3. [F8] executes a retrieval based upon the entered date. If no data is entered, All records will be retrieved from the table.
4. [TAB] or [ENTER] will move forward one field at a time.
5. After data has been retrieved, use the [PAGEUP] and [PAGEDOWN] keys or the up and down arrows to scroll through one record at a time.

Press [ESC] to return to Academic Term Information Form

Figure H.15 Help Screen for Academic Term Information

3. Insertion and/or Update Query

To perform an insertion and/or update query, the user must select option "2" of the Main Menu, displayed in Figure H.3. The user has now entered the Dean's Update Area of the Data Insertion Subsystem, and is presented with the screen depicted in Figure H.16. For this tutorial, the user wants to enter grade related information, and thus selects option "3" entitled "Grades Information".



DATA INSERTION SUBSYSTEM

DEAN'S UPDATE AREA

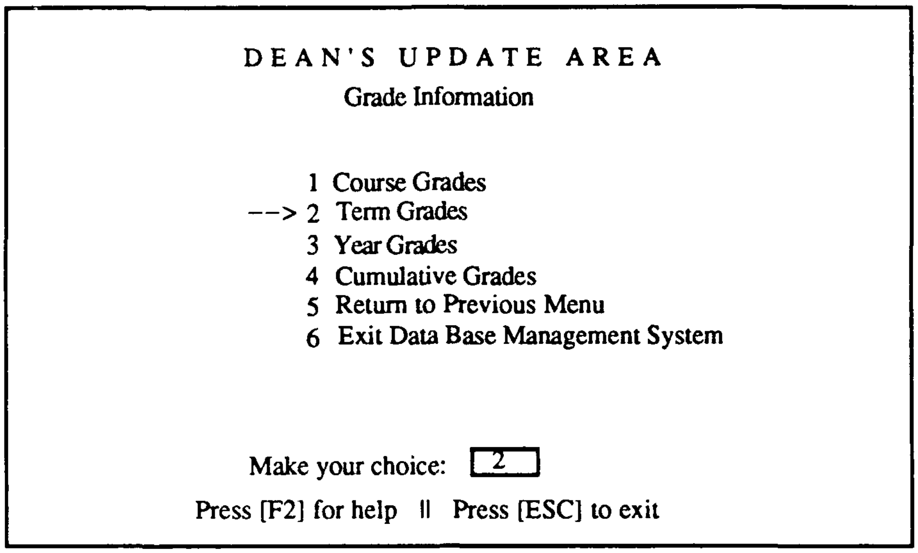
1 Cadet Information
2 Course Information
--> 3 Grade Information
4 Return to Previous Menu
5 Exit Data Base Management System

Make your choice: 3

Press [F2] for help || Press [ESC] to exit

Figure H.16 Dean's Update Area

The next screen shown is the Grade Information screen of the Dean's Update Area, depicted in Figure H.17. The user now selects the level of grades he wishes to modify or insert. For this tutorial, the user selects option "2", "Term Grades". The selection of this option presents the user with the Academic Term Information Insertion screen, shown in Figure H.18.

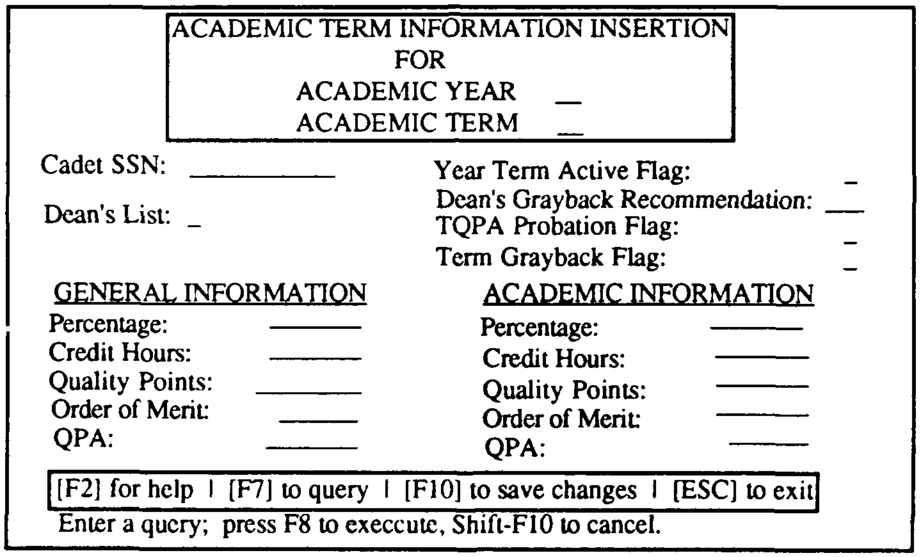


```
DEAN'S UPDATE AREA
Grade Information

        1  Course Grades
  --> 2  Term Grades
        3  Year Grades
        4  Cumulative Grades
        5  Return to Previous Menu
        6  Exit Data Base Management System

Make your choice: [2]
Press [F2] for help  ||  Press [ESC] to exit
```

Figure H.17 Grade Information



```
ACADEMIC TERM INFORMATION INSERTION
                FOR
      ACADEMIC YEAR  _
      ACADEMIC TERM  _

Cadet SSN: __________        Year Term Active Flag:             _
                             Dean's Grayback Recommendation:  __
Dean's List: _               TQPA Probation Flag:               _
                             Term Grayback Flag:                _

GENERAL INFORMATION          ACADEMIC INFORMATION
Percentage:      ______      Percentage:      ______
Credit Hours:    ______      Credit Hours:    ______
Quality Points:  ______      Quality Points:  ______
Order of Merit:  ______      Order of Merit:  ______
QPA:             ______      QPA:             ______

[F2] for help | [F7] to query | [F10] to save changes | [ESC] to exit
Enter a query; press F8 to execcute, Shift-F10 to cancel.
```

Figure H.18 Academic Term Information Insertion

It is from the screen presented in Figure H.18 that the user can add information to the WPDBMS. Using the [ENTER] key, the user now enters information for a cadet ensuring that the academic year, academic term, and cadet SSN fields are filled in. These fields are mandatory, and must be entered in order to successfully add the information from this form to the database. After adding all appropriate information, the user presses [F10] to commit these changes to the database.

This same screen can be used to modify data already contained in the WPDBMS. The user presses [F7] to place the screen into query mode. Note that the [F2] help function key operates differently in this mode, and brings up a help message line. This key will revert to normal operation once out of the query mode. The user now enters data that he wishes to search for, using the standard relational operators to find values greater than or less than entered data. The equal operator "=" is optional, as just entering a value performs an "equal to" search.

The user now presses [F8] to execute the query. The actual execution of the query may take some time, depending on its complexity. Once the query is complete, information will be displayed one record at a time, on the same form. The up/down arrow keys and the pageup/pagedown keys allow the user to scroll through all retrieved records, one at a time.

APPENDIX I

Oracle Code

The Oracle Code that follows consists of the actual commands that were used to develop the menus and forms for the prototype. Note that only one help screen is displayed for each menu and form, when in fact most menus and forms have multiple help screens available. The other help screens are similar, and are therefore omitted from this appendix.

MENUS

1. Main Menu

a. General Menu Information for Main Menu

```
GENERAL MENU INFORMATION AND MENU OPTIONS          22-MAY-90
                     Application: DEAN

 Menu name    : DEAN

 Title        : West Point Data Base Management System

 Sub_title    : Main Menu

 Bottom_title : Press [F2] for help  || Press [ESC] to exit

 Purpose      : This is the main menu for the WPDBMS.  The menu must be
                named the same as the application name.

                                  >> menu options
  ^  Char Mode: Replace  Page 1        Count: *15
```

b. Menu Options for Main Menu

```
          Options of application: DEAN    menu: DEAN

Option        : 1  Lower work-class: 0   Higher work-class: 15   Cmd_type: 1
Option_text   : Retrieve Data
Command_line: rmenu

Option        : 2  Lower work-class: 0   Higher work-class: 15   Cmd_type: 1
Option_text   : Insert Data
Command_line: CS4

Option        : 3  Lower work-class: 0   Higher work-class: 15   Cmd_type: 6
Option_text   : Exit Data Base Management System
Command_line: exit;

Option        :    Lower work-class:    Higher work-class:    Cmd_type:
Option_text   :
Command_line:

   General menu info <<                          >> options help
     Char Mode: Replace  Page 2                Count: *3
```

c. Help for Main Menu

```
Menu name: DEAN                              option_number: 1


Help text                                                  Seq_nr
Selecting this option will display the two major subdivisions in   2
the retrevial area - prepared queries and free form queries.       4
```

2. Data Retrieval Subsystem

a. General Menu Information for Data Retrieval Subsystem

```
GENERAL MENU INFORMATION AND MENU OPTIONS       22-MAY-90
                      Application: DEAN
```

```
Menu name    : RMENU

Title        : West Point Data Base Management System

Sub_title    : Data Retrevial Subsystem

Bottom_title : Press [F2] for help  || Press [ESC] to exit

Purpose      : This is the first menu of the retrieval subsystem.

                                        >> menu options
 ^ v Char Mode: Replace  Page 1            Count:  14
```

b. **Menu Options for Data Retrieval Subsystem**

```
     Options of application: DEAN    menu: RMENU

Option        : 1  Lower work-class: 0   Higher work-class: 15   Cmd_type: 1
Option_text   : Use Prepared Queries for Data Retrevial
Command_line: cs1

Option        : 2  Lower work-class: 0   Higher work-class: 15   Cmd_type: 1
Option_text   : Use Free Form Queries for Data Retrevial
Command_line: cs2

Option        : 3  Lower work-class: 0   Higher work-class: 15   Cmd_type: 6
Option_text   : Return to Previous Menu
Command_line: prvmenu;

Option        : 4  Lower work-class: 0   Higher work-class: 15   Cmd_type: 6
Option_text   : Exit Data Base Management System
Command_line: exit;

General menu info <<                          >> options help
     Char Mode: Replace  Page 2             Count: *4
```

c. **Help for Data Retrieval Subsystem**

```
  Menu name: RMENU                option_number: 1

Help text                                            Seq_nr
```

Selecting this option will display the major subdivisions of the 2
prepared queries available in the WPDBMS. 4

3. Prepared Queries

a. General Menu Information for Prepared Queries

```
GENERAL MENU INFORMATION AND MENU OPTIONS      22-MAY-90
                Application: DEAN

Menu name   : CS1

Title       : DATA RETREVIAL SUBSYSTEM

Sub_title   : Prepared Queries

Bottom_title : Press [F2] for help  || Press [ESC] to exit

Purpose     : The initial breakdown into subareas for the prepared
              queries portion of WPDBMS.

                                   >> menu options
  v Char Mode: Replace  Page 1        Count:  1
```

b. Menu Options for Prepared Queries

```
      Options of application: DEAN    menu: CS1

Option       : 1  Lower work-class: 0   Higher work-class: 15   Cmd_type: 1
Option_text  : Grades
Command_line: cs11

Option       : 2  Lower work-class: 0   Higher work-class: 15   Cmd_type: 6
Option_text  : Cadet Information
Command_line: help;

Option       : 3  Lower work-class: 0   Higher work-class: 15   Cmd_type: 6
Option_text  : Course Information
Command_line: help;

Option       : 4  Lower work-class: 0   Higher work-class: 15   Cmd_type: 6
Option_text  : Admissions Information
```

```
 Command_line: help;

General menu info <<                              >> options help
    v Char Mode: Replace  Page 2                 Count:  4


          Options of application: DEAN    menu: CS1

 Option         : 5  Lower work-class: 0   Higher work-class: 15   Cmd_type: 6
 Option_text    : Disciplinary Information
 Command_line: help;

 Option         : 6  Lower work-class: 0   Higher work-class: 15   Cmd_type: 6
 Option_text    : Return to Previous Menu
 Command_line: prvmenu;

 Option         : 7  Lower work-class: 0   Higher work-class: 15   Cmd_type: 6
 Option_text    : Exit Data Base Management System
 Command_line: exit;

 Option         :    Lower work-class: 0   Higher work-class: 0    Cmd_type:
 Option_text    :
 Command_line:

General menu info <<                              >> options help
   ^  Char Mode: Replace  Page 2                 Count: *7
```

c. Help for Prepared Queries

```
    Menu name: CS1                      option_number: 1

 Help text                                               Seq_nr
 Selecting this option will display the areas of prepared queries    2
 available concerning grades information within the WPDBMS.    4

 menu options <<          NOTE: Commit before starting help on a new option

     Char Mode: Replace  Page 3                 Count: *3
```

4. Grades

a. General Menu Information for Grades

```
GENERAL MENU INFORMATION AND MENU OPTIONS        22-MAY-90
                    Application: DEAN

 Menu name    : CS11

 Title        : PREPARED QUERIES

 Sub_title    : Grades

 Bottom_title : Press [F2] for help  || Press [ESC] to exit

 Purpose      : The selection menu for grades related prepared queries.

                                           >> menu option
  ^ v Char Mode: Replace  Page 1               Count:  2
```

b. Menu Options for Grades

```
     Options of application: DEAN    menu: CS11

Option        : 1  Lower work-class: 0   Higher work-class: 15   Cmd_type: 6
Option_text   : Grade Turn-In Verification
Command_line: oscmd runform cs111 &UN/&PW;

Option        : 2  Lower work-class: 0   Higher work-class: 15   Cmd_type: 6
Option_text   : Cumulative Grades
Command_line: help;

Option        : 3  Lower work-class: 0   Higher work-class: 15   Cmd_type: 6
Option_text   : Yearly Grades
Command_line: help;

Option        : 4  Lower work-class: 0   Higher work-class: 15   Cmd_type: 6
Option_text   : Term Grades
Command_line: help;

General menu info <<                          >> options help
    v Char Mode: Replace  Page 2              Count:  4
```

```
            Options of application: DEAN    menu: CS11

Optior        : 5  Lower work-class: 0   Higher work-class: 15   Cmd_type: 6
Option_text   : Course Grades
Command_line: help;

Option        : 6  Lower work-class: 0   Higher work-class: 15   Cmd_type: 6
Option_text   : Return to Previous Menu
Command_line: prvmenu;

Option        : 7  Lower work-class: 0   Higher work-class: 15   Cmd_type: 6
Option_text   : Exit Data Base Management System
Command_line: exit;

Option        :    Lower work-class: 0   Higher work-class: 0   Cmd_type:
Option_text   :
Command_line:

General menu info <<                        >> options help
   ^  Char Mode: Replace  Page 2            Count: *7
```

c. Help for Grades

```
 Menu name: CS11                    option_number: 1

Help text                                                      Seq_nr
Selecting this option will display the entry form for retrieving   2
information about courses which have not submitted grades since   4
some entered date.                                                 6
```

5. Free Form Queries

a. General Menu Information for Free Form Queries

```
GENERAL MENU INFORMATION AND MENU OPTIONS        22-MAY-90
                     Application: DEAN

 Menu name   : CS2

 Title         : DATA RETREVIAL SUBSYSTEM
```

```
Sub_title     : Free Form Queries

Bottom_title  : Press [F2] for help || Press [ESC] to exit

Purpose       : The initial breakdown into subareas for the free form
                queries portion of the WPDBMS.

                                          >> menu options
 ^ v Char Mode: Replace  Page 1                Count: *15
```

b. Menu Options for Free Form Queries

```
    Options of application: DEAN    menu: CS2

Option        : 1   Lower work-class: 0   Higher work-class: 15   Cmd_type: 1
Option_text   : Cadet Information
Command_line: cs21

Option        : 2   Lower work-class: 0   Higher work-class: 15   Cmd_type: 6
Option_text   : Course Information
Command_line: help;

Option        : 3   Lower work-class: 0   Higher work-class: 15   Cmd_type: 6
Option_text   : Admissions Information
Command_line: help;

Option        : 4   Lower work-class: 0   Higher work-class: 15   Cmd_type: 6
Option_text   : Return to Previous Menu
Command_line: prvmenu;

General menu info <<                            >> options help
   v Char Mode: Replace  Page 2                Count:  4


     Options of application: DEAN     menu: CS2

Option        : 3   Lower work-class: 0   Higher work-class: 15   Cmd_type: 6
Option_text   : Admissions Information
Command_line: help;

Option        : 4   Lower work-class: 0   Higher work-class: 15   Cmd_type: 6
Option_text   : Return to Previous Menu
```

```
Command_line: prvmenu;

Option        : 5   Lower work-class: 0    Higher work-class: 15   Cmd_type: 6
Option_text   : Exit Data Base Management System
Command_line: exit;

Option        :     Lower work-class: 0    Higher work-class: 0    Cmd_type:
Option_text   :
Command_line:

General menu info <<                              >> options help

Record must be entered or deleted first.
   ^  Char Mode: Replace  Page 2            Count: *5
```

c. Help for Free Form Queries

```
Menu name: CS1                    option_number: 1

Help text                                                       Seq_nr
Selecting this option will display the areas of prepared queries   2
available concerning graaes information within the WPDBMS.         4
grades related information.                                        6
```

6. Cadet Information

a. General Menu Information for Cadet Information

```
GENERAL MENU INFORMATION AND MENU OPTIONS          22-MAY-90
                      Application: DEAN

Menu name    : CS21

Title        : FREE FORM QUERIES

Sub_title    : Cadet Information

Bottom_title : Press [F2] for help || Press [ESC] to exit

Purpose      : The selection menu for cadet related free form queries.

                                          >> menu options
```

```
^ v Char Mode: Replace  Page 1              Count: *15
```

b. Menu Options for Cadet Information

```
      Options of application: DEAN    menu: CS21

Option        : 1  Lower work-class: 0   Higher work-class: 15   Cmd_type: 6
Option_text   : Personal Information
Command_line: help;

Option        : 2  Lower work-class: 0   Higher work-class: 15   Cmd_type: 1
Option_text   : Academic Information
Command_line: cs212

Option        : 3  Lower work-class: 0   Higher work-class: 15   Cmd_type: 6
Option_text   : Disciplinary Information
Command_line: help;

Option        : 4  Lower work-class: 0   Higher work-class: 15   Cmd_type: 6
Option_text   : Return to Previous Menu
Command_line: prvmenu;

General menu info <<                        >> options help
   v Char Mode: Replace  Page 2             Count:  4


     Options of application: DEAN    menu: CS21

Option        : 3  Lower work-class: 0   Higher work-class: 15   Cmd_type: 6
Option_text   : Disciplinary Information
Command_line: help;

Option        : 4  Lower work-class: 0   Higher work-class: 15   Cmd_type: 6
Option_text   : Return to Previous Menu
Command_line: prvmenu;

Option        : 5  Lower work-class: 0   Higher work-class: 15   Cmd_type: 6
Option_text   : Exit Data Base Management System
Command_line: exit;

Option        :    Lower work-class: 0   Higher work-class: 0    Cmd_type:
Option_text   :
Command_line:
```

```
General menu info <<                          >> options help
   ^  Char Mode: Replace  Page 2             Count: *5
```

c. Help for Cadet Information

```
  Menu name: CS21                 option_number: 1

Help text                                                    Seq_nr
Selecting this option will display the areas of free form queries  2
available concerning personal information about cadets within the  4
WPDBMS.                                                             6
```

7. Cadet Information

a. General Menu Information for Cadet Academic Information

```
GENERAL MENU INFORMATION AND MENU OPTIONS        22-MAY-90
                        Application: DEAN

Menu name    : CS212

Title        : FREE FORM QUERIES

Sub_title    : Cadet Academic Information

Bottom_title : Press [F2] for help  || Press [ESC] to exit

Purpose      : The selection menu for cadet academic related free form
               queries.

                                             >> menu options
 ^ v Char Mode: Replace  Page 1                 Count:  9
```

b. Menu Options for Cadet Academic Information

```
    Options of application: DEAN    menu: CS212

Option        : 1   Lower work-class: 0   Higher work-class: 15   Cmd_type: 6
Option_text   : Cadet Academic Plan
Command_line: help;
```

```
 Option         : 2   Lower work-class: 0   Higher work-class: 15   Cmd_type: 6
 Option_text    : Course Grades
 Command_line: help;

 Option         : 3   Lower work-class: 0   Higher work-class: 15   Cmd_type: 6
 Option_text    : Validated Courses
 Command_line: help;

 Option         : 4   Lower work-class: 0   Higher w  k-class: 15   Cmd_type: 4
 Option_text    : Term Grades
 Command_line: runform cs2124 &UN/&PW

General menu info <<                            >> options help
    v Char Mode: Replace  Page 2               Count:  4


           Options of application: DEAN    menu: CS212

 Option         : 5   Lower work-class: 0   Higher work-class: 15   Cmd_type: 6
 Option_text    : Year Grades
 Command_line: help;

 Option         : 6   Lower work-class: 0   Higher work-class: 15   Cmd_type: 6
 Option_text    : Cumulative Grades
 Command_line: help;

 Option         : 7   Lower work-class: 0   Higher work-class: 15   Cmd_type: 6
 Option_text    : Return to Previous Menu
 Command_line: prvmenu;

 Option         : 8   Lower work-class: 0   Higher work-class: 15   Cmd_type: 6
 Option_text    : Exit Data Base Management System
 Command_line: exit;

General menu info <<                            >> options help
   ^  Char Mode: Replace  Page 2               Count: *8
```

c. Help for Cadet Academic Information

```
  Menu name: CS212                 option_number: 1

 Help text                                                    Seq_nr
```

This option has not been implemented in this prototype. Eventually, selecting this option will display the entry form for retrieving cadet academic plan information.

8. Dean's Update Area

a. General Menu Information for Dean's Update Area

```
GENERAL MENU INFORMATION AND MENU OPTIONS          23-MAY-90
                     Application: DEAN

 Menu name    : CS4

 Title        : DATA INSERTION SUBSYSTEM

 Sub_title    : Dean's Update Area

 Bottom_title : Press [F2] for help || Press [ESC] to exit

 Purpose      : This is the first screen after the correct password for the
                dean's office is given at form ipswd.

                                 >> menu options
   v Char Mode: Replace  Page 1        Count:  1
```

b. Menu Options for Dean's Update Area

```
          Options of application: DEAN      menu: CS4

Option       : 1  Lower work-class: 0   Higher work-class: 15   Cmd_type: 6
Option_text  : Cadet Information
Command_line: help;

Option       : 2  Lower work-class: 0   Higher work-class: 15   Cmd_type: 6
Option_text  : Course Information
Command_line: help;

Option       : 3  Lower work-class: 0   Higher work-class: 15   Cmd_type: 1
Option_text  : Grade Information
Command_line: cs43

Option       : 4  Lower work-class: 0   Higher work-class: 15   Cmd_type: 6
Option_text  : Return to Previous Menu
```

```
 Command_line: prvmenu;

General menu info <<                                   >> options help
    v Char Mode: Replace  Page 2                     Count:  4


              Options of application: DEAN       menu: CS4

 Option          : 3   Lower work-class: 0    Higher work-class: 15    Cmd_type: 1
 Option_text     : Grade Information
 Command_line: cs43

 Option          : 4   Lower work-class: 0    Higher work-class: 15    Cmd_type: 6
 Option_text     : Return to Previous Menu
 Command_line: prvmenu;

 Option          : 5   Lower work-class: 0    Higher work-class: 15    Cmd_type: 6
 Option_text     : Exit Data Base Management System
 Command_line: exit;

 Option          :     Lower work-class: 0    Higher work-class: 0    Cmd_type:
 Option_text     :
 Command_line:

General menu info <<                                   >> options help
   ^  Char Mode: Replace  Page 2                     Count: *5
```

c. Help for Dean's Update Area

```
   Menu name: CS4                        option_number: 3

 Help text                                                         Seq_nr
 Selecting this option will display the insertion/update subareas      8
 available concerning grade information within the WPDBMS.            10

 menu options <<          NOTE: Commit before starting help on a new option
     Char Mode: Replace  Page 3                  Count: *2
```

9. Grade Information

a. General Menu Information for Grade Information

```
GENERAL MENU INFORMATION AND MENU OPTIONS          23-MAY-90
                    Application: DEAN

Menu name    : CS43

Title        : DEAN'S UPDATE AREA

Sub_title    : Grade Information

Bottom_title : Press [F2] for help  ||  Press [ESC] to exit

Purpose      : This menu allows the user to select the data area into which
               he desires to add or modify information.

                                        >> menu options
 ^  Char Mode: Replace  Page 1              Count: *2
```

b. Menu Options for Grade Information

```
        Options of application: DEAN      menu: CS43

Option        : 1   Lower work-class: 0   Higher work-class: 15   Cmd_type: 6
Option_text   : Course Grades
Command_line: help;

Option        : 2   Lower work-class: 0   Higher work-class: 15   Cmd_type: 4
Option_text   : Term Grades
Command_line: runform cs432 &UN/&PW

Option        : 3   Lower work-class: 0   Higher work-class: 15   Cmd_type: 6
Option_text   : Year Grades
Command_line: help;

Option        : 4   Lower work-class: 0   Higher work-class: 15   Cmd_type: 6
Option_text   : Cumulative Grades
Command_line: help;

General menu info <<                          >> options help
   v Char Mode: Replace  Page 2             Count:  4


        Options of application: DEAN      menu: CS43
```

```
Option       : 4  Lower work-class: 0   Higher work-class: 15   Cmd_type: 6
Option_text  : Cumulative Grades
Command_line: help;

Option       : 5  Lower work-class: 0   Higher work-class: 0   Cmd_type: 6
Option_text  : Return to Previous Menu
Command_line: prvmenu;

Option       : 6  Lower work-class: 0   Higher work-class: 15   Cmd_type: 6
Option_text  : Exit Data Base Management System
Command_line: exit;

Option       :    Lower work-class: 0   Higher work-class: 0   Cmd_type:
Option_text  :
Command_line:

General menu info <<                         >> options help
  ^  Char Mode: Replace  Page 2              Count: *6
```

c. Help for Grade Information

```
   Menu name: CS43                    option_number: 2

Help text                                                   Seq_nr
Selecting this option will display the entry form for retrieving   8
term grade information.                                            10

menu options <<          NOTE: Commit before starting help on a new option
     Char Mode: Replace  Page 3              Count: *2
```

FORMS

1. Grade Turn-in Verification

Formatted form definition for ORACLE SQLForms Version 2
Generated by fmtinp.sh(v2):

Form header ...

```
; Generated by SQL*Forms Version 2.3.22 on Sun May 13 19:20:26 1990.
; Application owner is GUILMETTE. Application name is CS111.
; (Application ID is 32)
; ---------------------------------------------
;Application Title : cs111

****************************************************
;Block name / Description : cs211/*cs211
****************************************************
;Table name : cs211
;Check for uniqueness before inserting Y/N : N
;Display/Buffer how many records : 1
---------- ;Block trigger name : *KEY-COMMIT
#exemacro case acad_term is
when " then endtrig message 'must enter data in all fields';
when others then null;
end case;
Must exist[Y]
#exemacro case day is
when " then endtrig message 'must enter data in all fields';
when others then null;
end case;
Must exist[Y]
#exemacro case month is
when " then endtrig message 'must enter data in all fields';
when others then null;
end case;
Must exist[Y]
#exemacro case year is
when " then endtrig message 'must enter data in all fields';
when others then null;
end case;
Must exist[Y]
```

```
#exemacro case percent is
when '' then endtrig message 'must enter data in all fields';
when others then null;
end case;
Must exist[Y]
#exemacro case acad_year is
when '' then endtrig message 'must enter data in all fields';
when others then null;
end case;
Must exist[Y]
#exemacro case acad_term is
when '' then endtrig message 'must enter data in all fields';
when others then null;
end case;
Must exist[Y]
#ohost 'sqlplus -s guilmette/wilson @\oracle5\pbin\cs111a ' ||
:day || ' ' || :month || ' ' || :year || ' ' || :percent || ' ' ||
:acad_year || ' ' || :acad_term
Must exist[Y]
#exemacro copy day into global.day;
copy month into global.month;
copy year into global.year;
copy percent into global.percent;
copy acad_year into global.acad_year;
copy acad_term into global.acad_term;
Must exist[Y]
#ohost 'runform cs111a guilmette/wilson'
Must exist[Y]
---------- ;Block trigger name : *KEY-EXIT
#exemacro exit;
Must exist[Y]
---------- ;Block trigger name : *KEY-HELP
#exemacro call help111;
;Message if value not found : help key failed!!
Must exist[Y]
---------- ;Field name : day
Type[RINT]          Lengths: Field[2] / Display[2] / Query[2]
In base table[N]
Page[1]       Line[7]       Column[59]
Enter[*Y]     Update[N]     Query[N]
**KEY-HELP
#exemacro call help111;
Must exist[Y]
```

```
**KEY-NXTFLD
#exemacro nxtfld;
Must exist[Y]
**KEY-OTHERS
#exemacro null;
Must exist[Y]         Mandatory[Y]         Fixed len[N]  Auto-jump[N]
     Uppercase[N]
Lowest[1]     Highest[31]   Default[]
---------- ;Field name : month
Type[RINT]            Lengths: Field[2] / Display[2] / Query[2]
In base table[N]
Page[1]       Line[8]       Column[59]
Enter[*Y]     Update[N]     Query[N]
**KEY-HELP
#exemacro call help111;
Must exist[Y]
**KEY-NXTFLD
#exemacro nxtfld;
Must exist[Y]
**KEY-OTHERS
#exemacro null;
Must exist[Y]         Mandatory[Y]         Fixed len[N]  Auto-jump[N]
     Uppercase[N]
Lowest[1]     Highest[12]   Default[]
---------- ;Field name : year
Type[INT]             Lengths: Field[2] / Display[2] / Query[2]
In base table[N]
Page[1]       Line[9]       Column[59]
Enter[*Y]     Update[N]     Query[N]
**KEY-HELP
#exemacro call help111;
Must exist[Y]
**KEY-NXTFLD
#exemacro nxtfld;
Must exist[Y]
**KEY-OTHERS
#exemacro null;
Must exist[Y]         Mandatory[Y]         Fixed len[N]  Auto-jump[N]
     Uppercase[N]
---------- ;Field name : percent
Type[RINT]            Lengths: Field[2] / Display[2] / Query[2]
In base table[N]
Page[1]       Line[14]      Column[59]
```

```
Enter[*Y]    Update[N]    Query[N]
**KEY-HELP
#exemacro call help111;
Must exist[Y]
**KEY-NXTFLD
#exemacro nxtfld;
Must exist[Y]
**KEY-OTHERS
#exemacro null;
Must exist[Y]        Mandatory[Y]        Fixed len[N]  Auto-jump[N]
    Uppercase[N]
---------- ;Field name : acad_year
Type[INT]            Lengths: Field[2] / Display[2] / Query[2]
In base table[N]
Page[1]      Line[19]      Column[59]
Enter[*Y]    Update[N]    Query[N]
**KEY-HELP
#exemacro call help111;
Must exist[Y]
**KEY-NXTFLD
#exemacro nxtfld;
Must exist[Y]
**KEY-OTHERS
#exemacro null;
Must exist[Y]        Mandatory[Y]        Fixed len[N]  Auto-jump[N]
    Uppercase[N]
---------- ;Field name : acad_term
Type[INT]            Lengths: Field[1] / Display[1] / Query[1]
In base table[N]
Page[1]      Line[20]      Column[60]
Enter[*Y]    Update[N]    Query[N]
**KEY-HELP
#exemacro call help111;
Must exist[Y]
**KEY-NXTFLD
#exemacro gofld day;
Must exist[Y]
**KEY-OTHERS
#exemacro null;
Must exist[Y]        Mandatory[Y]        Fixed len[N]  Auto-jump[N]
    Uppercase[N]
%LINE
3
```

```
                    GRADE TURN-IN VERIFICATION
%LINE
5
 Date by which grades are considered deliquent: %LINE
7
                  Day: (ex. 03 for the third day) ...
                  Month: (ex. 12 for December) .......
                   Year: (ex. 90 for 1990) ............
%LINE
12
 Course Percentage by which grade is considered delinquent: %LINE
14
                  Course Percentage: (ex. 80 for 80%)
%LINE
17
 Check courses for what academic term?
%LINE
19
                   Year: (ex. 90 for 1990) ............
                   Term: (ex. 1 for spring term) ......
%LINE
22
         [F2] for help    [F10] to accept input    [ESC] to exit
%LINE
2
%LINE
2
%BOX
                   p--------------------------q
                  l                           l
                   b--------------------------d
%LINE
21
          p---------------n----------------------------n----------------q
         l                l                            l                l
          b---------------u----------------------------u----------------d
%TEXT
%END
```

2. Late or Missirg Grade Report

Formatted form definition for ORACLE SQLForms Version 2
Generated by fmtinp.sh(v2):

```
Form header ...

; Generated by SQL*Forms Version 2.3.22 on Mon May 14 20:58:24 1990.
; Application owner is GUILMETTE.  Application name is CS111A.
; (Application ID is 34)
; ----------------------------------------------
;Application Title : cs111a

*****************************************************
;Form trigger name / Description : **KEY-DOWN
*****************************************************
#exemacro nxtrec;
Must exist[Y]

*****************************************************
;Form trigger name / Description : **KEY-EXIT
*****************************************************
#exemacro exit;
Must exist[Y]

*****************************************************
;Form trigger name / Description : **KEY-HELP
*****************************************************
#exemacro call help111a;
Must exist[Y]

*****************************************************
;Form trigger name / Description : **KEY-NXTBLK
*****************************************************
#exemacro nxtblk;
Must exist[Y]

*****************************************************
;Form trigger name / Description : **KEY-NXTREC
*****************************************************
#exemacro nxtrec;
Must exist[Y]

*****************************************************
;Form trigger name / Description : **KEY-OTHERS
*****************************************************
#exemacro null;
```

```
Must exist[Y]

****************************************************
;Form trigger name / Description : **KEY-PRVBLK
****************************************************
#exemacro prvrec;
Must exist[Y]

****************************************************
;Form trigger name / Description : **KEY-PRVREC
****************************************************
#exemacro prvrec;
Must exist[Y]

****************************************************
;Form trigger name / Description : **KEY-STARTUP
****************************************************
#exemacro exeqry all;
Must exist[Y]

****************************************************
;Form trigger name / Description : **KEY-UP
****************************************************
#exemacro prvrec;
Must exist[Y]

****************************************************
;Block name / Description : earns_grade_in/*earns_grade_in
****************************************************
;Table name : CS111A
;Check for uniqueness before inserting Y/N : N
;Display/Buffer how many records : 10
;Base crt line ?
9
;How many physical lines per record ?
1
---------- ;Field name : COURSE_PREFIX
Type[CHAR]                Lengths: Field[2] / Display[2] / Query[2]
In base table[Y]     In prim key[N]
Page[1]      Line[1]      Column[4]
Enter[Y]     Update[N]    Mandatory[Y]       Fixed len[N]  Auto-jump[N]
   Uppercase[N]
;Help message : Enter value for : COURSE_PREFIX
```

```
---------- ;Field name : COURSE_NUMBER
Type[CHAR]                Lengths: Field[3] / Display[3] / Query[3]
In base table[Y]      In prim key[N]
Page[1]       Line[1]       Column[6]
Enter[Y]      Update[N]     Mandatory[Y]       Fixed len[N]  Auto-jump[N]
    Uppercase[N]
;Help message : Enter value for : COURSE_NUMBER
---------- ;Field name : COURSE_SUFFIX
Type[CHAR]                Lengths: Field[1] / Display[1] / Query[1]
In base table[Y]      In prim key[N]
Page[1]       Line[1]       Column[9]
Enter[Y]      Update[N]     Mandatory[N]       Fixed len[N]  Auto-jump[N]
    Uppercase[N]
;Help message : Enter value for : COURSE_SUFFIX
---------- ;Field name : GRADE_PER_YEAR
Type[RINT]            Lengths: Field[2] / Display[2] / Query[3]
In base table[Y]      In prim key[N]
Page[1]       Line[1]       Column[13]
Enter[Y]      Update[N]     Mandatory[N]       Fixed len[N]  Auto-jump[N]
    Uppercase[N]
;Help message : Enter value for : GRADE_PER_YEAR
---------- ;Field name : GRADE_PER_DAY
Type[RINT]            Lengths: Field[2] / Display[2] / Query[3]
In base table[Y]      In prim key[N]
Page[1]       Line[1]       Column[15]
Enter[Y]      Update[N]     Mandatory[N]       Fixed len[N]  Auto-jump[N]
    Uppercase[N]
;Help message : Enter value for : GRADE_PER_DAY
---------- ;Field name : GRADE_PER_MONTH
Type[RINT]            Lengths: Field[2] / Display[2] / Query[3]
In base table[Y]      In prim key[N]
Page[1]       Line[1]       Column[17]
Enter[Y]      Update[N]     Mandatory[N]       Fixed len[N]  Auto-jump[N]
    Uppercase[N]
;Help message : Enter value for : GRADE_PER_MONTH
---------- ;Field name : HOUR
Type[CHAR]                Lengths: Field[1] / Display[1] / Query[1]
In base table[Y]      In prim key[N]
Page[1]       Line[1]       Column[23]
Enter[Y]      Update[N]     Mandatory[Y]       Fixed len[N]  Auto-jump[N]
    Uppercase[N]
;Help message : Enter value for : HOUR
---------- ;Field name : SECTION
```

```
Type[CHAR]                Lengths: Field[2] / Display[2] / Query[2]
In base table[Y]     In prim key[N]
Page[1]        Line[1]        Column[24]
Enter[Y]       Update[N]      Mandatory[N]        Fixed len[N]  Auto-jump[N]
    Uppercase[N]
---------- ;Field name : LETTER_GRADE
Type[CHAR]                Lengths: Field[2] / Display[2] / Query[2]
In base table[Y]     In prim key[N]
Page[1]        Line[1]        Column[33]
Enter[Y]       Update[N]      Mandatory[N]        Fixed len[N]  Auto-jump[N]
    Uppercase[N]
;Help message : Enter value for : LETTER_GRADE
---------- ;Field name : SSN
Type[CHAR]                Lengths: Field[11] / Display[11] / Query[11]
In base table[Y]     In prim key[N]
Page[1]        Line[1]        Column[41]
Enter[Y]       Update[N]      Mandatory[Y]        Fixed len[N]  Auto-jump[N]
    Uppercase[N]
;Help message : Enter value for : SSN
---------- ;Field name : YEAR
Type[CHAR]                Lengths: Field[2] / Display[2] / Query[5]
In base table[Y]     In prim key[N]
---------- ;Field name : TERM
Type[CHAR]                Lengths: Field[1] / Display[1] / Query[3]
In base table[Y]     In prim key[N]
---------- ;Field name : CADET_SHORT_NAME_FIRST_HALF
Type[CHAR]                Lengths: Field[17] / Display[17] / Query[17]
In base table[Y]     In prim key[N]
Page[1]        Line[1]        Column[56]
Enter[Y]       Update[Y]      Mandatory[N]        Fixed len[N]  Auto-jump[N]
    Uppercase[N]
%LINE
2
             THIS REPORT CONTAINS PRIVACY ACT DATA
%LINE
5
                Late or Missing Grade Report
%LINE
7
  Course   Date   Section   Grade     SSN          Name
%LINE
22
      [F2] for help   [PAGEUP]/[PAGEDOWN] to scroll    [ESC] to exit
```

```
%LINE
1
%BOX
              p-----------------------------------q
             |                                     |
              b-----------------------------------d
%LINE
6
                 <---------------------------->
%LINE
8
  <----> <----> <->    <>   <---------> <-------------->
%LINE
21
      p--------------n-----------------------------n---------------q
     |               |                             |               |
      b--------------u-----------------------------u---------------d
%TEXT
%END
```

3. Academic Term Information Retrieval

```
Formatted form definition for ORACLE SQLForms Version 2
Generated by fmtinp.sh(v2):

Form header ...

; Generated by SQL*Forms Version 2.3.22 on Mon May 14 22:12:45 1990.
; Application owner is GUILMETTE. Application name is CS2124.
; (Application ID is 33)
; ---------------------------------------------
;Application Title : cs2124

*****************************************************
;Block name / Description : term_cadet_grades/term_cadet_grades
*****************************************************
;Table name : guilmette.term_cadet_grades
;Check for uniqueness before inserting Y/N : N
;Display/Buffer how many records : 1
---------- ;Block trigger name : *KEY-DOWN
#exemacro nxtrec;
Must exist[Y]
```

```
---------- ;Block trigger name : *KEY-ENTQRY
#exemacro clrrec; entqry;
Must exist[Y]
---------- ;Block trigger name : *KEY-EXEQRY
#EXEMACRO synchronize; message 'Use up/down arrows to scroll thru
records';
exeqry all;
Must exist[Y]
---------- ;Block trigger name : *KEY-EXIT
#exemacro clrrec;
exit;
Must exist[Y]
---------- ;Block trigger name : *KEY-HELP
#exemacro call help2124;
Must exist[Y]
---------- ;Block trigger name : *KEY-NXTFLD
#exemacro nxtfld;
Must exist[Y]
---------- ;Block trigger name : *KEY-NXTREC
#exemacro nxtrec;
Must exist[Y]
---------- ;Block trigger name : *KEY-OTHERS
#exemacro null;
Must exist[Y]
---------- ;Block trigger name : *KEY-PRVREC
#exemacro prvrec;
Must exist[Y]
---------- ;Block trigger name : *KEY-UP
#exemacro prvrec;
Must exist[Y]
---------- ;Field name : ACADEMIC_YEAR
Type[NUMBER]            Lengths: Field[4] / Display[2] / Query[4]
In base table[Y]     In prim key[N]
Page[1]       Line[4]       Column[46]
Enter[Y]      Update[N]
**KEY-F2
#EXEMACRO CALL HELP2124;
Must exist[Y]
**KEY-HELP
#EXEMACRO CALL HELP2124;
Must exist[Y]        Mandatory[N]        Fixed len[N]  Auto-jump[N]
    Uppercase[N]
;Help message : Enter value for : ACADEMIC_YEAR
```

```
---------- ;Field name : ACADEMIC_TERM
Type[NUMBER]              Lengths: Field[4] / Display[2] / Query[4]
In base table[Y]      In prim key[N]
Page[1]        Line[5]        Column[46]
Enter[Y]       Update[N]
**KEY-HELP
#EXEMACRO CALL HELP2124;
Must exist[Y]         Mandatory[N]          Fixed len[N]  Auto-jump[N]
     Uppercase[N]
;Help message : Enter value for : ACADEMIC_TERM
---------- ;Field name : SSN
Type[CHAR]                Lengths: Field[11] / Display[11] / Query[11]
In base table[Y]      In prim key[N]
Page[1]        Line[8]        Column[19]
Enter[Y]       Update[N]
**KEY-HELP
#EXEMACRO CALL HELP2124;
Must exist[Y]         Mandatory[N]          Fixed len[N]  Auto-jump[N]
     Uppercase[N]
;Help message : Enter value for : SSN
---------- ;Field name : TERM_DEANS_LIST
Type[CHAR]                Lengths: Field[1] / Display[1] / Query[1]
In base table[Y]      In prim key[N]
Page[1]        Line[10]       Column[20]
Enter[Y]       Update[N]
**KEY-HELP
#EXEMACRO CALL HELP2124;
Must exist[Y]         Mandatory[N]          Fixed len[N]  Auto-jump[N]
     Uppercase[N]
;Help message : Enter value for : TERM_DEANS_LIST
---------- ;Field name : YEAR_TERM_ACTIVE_FLAG
Type[CHAR]                Lengths: Field[1] / Display[1] / Query[1]
In base table[Y]      In prim key[N]
Page[1]        Line[8]        Column[75]
Enter[Y]       Update[N]
**KEY-HELP
#EXEMACRO CALL HELP2124;
Must exist[Y]         Mandatory[N]          Fixed len[N]  Auto-jump[N]
     Uppercase[N]
;Help message : Enter value for : YEAR_TERM_ACTIVE_FLAG
---------- ;Field name : DEANS_GRAYBK_RECOMM_CODE
Type[CHAR]                Lengths: Field[3] / Display[3] / Query[3]
In base table[Y]      In prim key[N]
```

```
Page[1]       Line[9]       Column[73]
Enter[Y]      Update[N]
**KEY-HELP
#EXEMACRO CALL HELP2124;
Must exist[Y]         Mandatory[N]        Fixed len[N]  Auto-jump[N]
    Uppercase[N]
;Help message : Enter value for : DEANS_GRAYBK_RECOMM_CODE
---------- ;Field name : TQPA_PROBATION_FLAG
Type[CHAR]                  Lengths: Field[1] / Display[1] / Query[1]
In base table[Y]      In prim key[N]
Page[1]       Line[10]      Column[75]
Enter[Y]      Update[N]
**KEY-HELP
#EXEMACRO CALL HELP2124;
Must exist[Y]         Mandatory[N]        Fixed len[N]  Auto-jump[N]
    Uppercase[N]
;Help message : Enter value for : TQPA_PROBATION_FLAG
---------- ;Field name : TERM_END_GRAYBK_FLAG
Type[CHAR]                  Lengths: Field[1] / Display[1] / Query[1]
In base table[Y]      In prim key[N]
Page[1]       Line[11]      Column[75]
Enter[Y]      Update[N]
**KEY-HELP
#EXEMACRO CALL HELP2124;
Must exist[Y]         Mandatory[N]        Fixed len[N]  Auto-jump[N]
    Uppercase[N]
;Help message : Enter value for : TERM_END_GRAYBK_FLAG
---------- ;Field name : TERM_GENERAL_PERCENTILE
Type[NUMBER]                Lengths: Field[7] / Display[7] / Query[7]
In base table[Y]      In prim key[N]
Page[1]       Line[15]      Column[29]
Enter[Y]      Update[N]     Mandatory[N]        Fixed len[N]  Auto-jump[N]
    Uppercase[N]
;Help message : Enter value for : TERM_GENERAL_PERCENTILE
---------- ;Field name : TERM_ACADEMIC_PERCENTILE
Type[NUMBER]                Lengths: Field[7] / Display[7] / Query[7]
In base table[Y]      In prim key[N]
Page[1]       Line[15]      Column[66]
Enter[Y]      Update[N]     Mandatory[N]        Fixed len[N]  Auto-jump[N]
    Uppercase[N]
;Help message : Enter value for : TERM_ACADEMIC_PERCENTILE
---------- ;Field name : TERM_GEN_CREDIT_HRS
Type[NUMBER]                Lengths: Field[7] / Display[7] / Query[7]
```

```
In base table[Y]      In prim key[N]
Page[1]        Line[16]       Column[29]
Enter[Y]       Update[N]      Mandatory[N]        Fixed len[N]  Auto-jump[N]
     Uppercase[N]
;Help message : Enter value for : TERM_GEN_CREDIT_HRS
---------- ;Field name : TERM_ACADEMIC_CREDIT_HRS
Type[NUMBER]                  Lengths: Field[7] / Display[7] / Query[7]
In base table[Y]      In prim key[N]
Page[1]        Line[16]       Column[66]
Enter[Y]       Update[N]      Mandatory[N]        Fixed len[N]  Auto-jump[N]
     Uppercase[N]
;Help message : Enter value for : TERM_ACADEMIC_CREDIT_HRS
---------- ;Field name : TERM_GEN_QUALITY_PTS
Type[NUMBER]                  Lengths: Field[8] / Display[8] / Query[8]
In base table[Y]      In prim key[N]
Page[1]        Line[17]       Column[28]
Enter[Y]       Update[N]      Mandatory[N]        Fixed len[N]  Auto-jump[N]
     Uppercase[N]
;Help message : Enter value for : TERM_GEN_QUALITY_PTS
---------- ;Field name : TERM_ACADEMIC_QUALITY_PTS
Type[NUMBER]                  Lengths: Field[8] / Display[8] / Query[8]
In base table[Y]      In prim key[N]
Page[1]        Line[17]       Column[65]
Enter[Y]       Update[N]      Mandatory[N]        Fixed len[N]  Auto-jump[N]
     Uppercase[N]
;Help message : Enter value for : TERM_ACADEMIC_QUALITY_PTS
---------- ;Field name : TERM_GENERAL_OM
Type[NUMBER]                  Lengths: Field[6] / Display[6] / Query[6]
In base table[Y]      In prim key[N]
Page[1]        Line[18]       Column[30]
Enter[Y]       Update[N]      Mandatory[N]        Fixed len[N]  Auto-jump[N]
     Uppercase[N]
;Help message : Enter value for : TERM_GENERAL_OM
---------- ;Field name : TERM_ACADEMIC_OM
Type[NUMBER]                  Lengths: Field[6] / Display[6] / Query[6]
In base table[Y]      In prim key[N]
Page[1]        Line[18]       Column[67]
Enter[Y]       Update[N]      Mandatory[N]        Fixed len[N]  Auto-jump[N]
     Uppercase[N]
;Help message : Enter value for : TERM_ACADEMIC_OM
---------- ;Field name : TERM_GEN_QPA
Type[NUMBER]                  Lengths: Field[7] / Display[7] / Query[7]
In base table[Y]      In prim key[N]
```

```
Page[1]        Line[19]       Column[29]
Enter[Y]       Update[N]      Mandatory[N]         Fixed len[N]  Auto-jump[N]
    Uppercase[N]
;Help message : Enter value for : TERM_GEN_QPA
---------- ;Field name : TERM_ACAD_QPA
Type[NUMBER]                  Lengths: Field[7] / Display[7] / Query[7]
In base table[Y]      In prim key[N]
Page[1]        Line[19]       Column[66]
Enter[Y]       Update[N]      Mandatory[N]         Fixed len[N]  Auto-jump[N]
    Uppercase[N]
;Help message : Enter value for : TERM_ACAD_QPA
%LINE
2
               ACADEMIC TERM INFORMATION RETRIEVAL
                          FOR
                    ACADEMIC YEAR
                    ACADEMIC TERM
%LINE
8
                         Term GrayBack Flag: %LINE
13
        GENERAL INFORMATION               ACADEMIC INFORMATION
%LINE
15
       QPA:                        QPA: %LINE
22
 [F2] to help   [TAB]/[ENTER] to move forward   [F7] to query   [ESC] to exit
%LINE
1
%BOX
               p----------------------------------q
              |                                    |
              |                                    |
              |                                    |
              |                                    |
               b----------------------------------d
%LINE
13
                                ^^
         <---------------->     vv     <---------------->
                                ^^
                                ||
                                ||
                        ||
                        vv
%LINE
21
p------------n----------------------------n--------------n-------------q
|            |                            |              |             |
b------------u----------------------------u--------------u-------------d
%TEXT
%END
```

4. Academic Term Information Insertion

Formatted form definition for ORACLE SQLForms Version 2
Generated by fmtinp.sh(v2):

Form header ...

```
; Generated by SQL*Forms Version 2.3.22 on Mon May 14 23:05:36 1990.
; Application owner is GUILMETTE.  Application name is CS432.
; (Application ID is 36)
; ---------------------------------------------
;Application Title : cs2124

*****************************************************
;Block name / Description : term_cadet_grades/term_cadet_grades
*****************************************************
;Table name : guilmette.term_cadet_grades
;Check for uniqueness before inserting Y/N : N
;Display/Buffer how many records : 1
---------- ;Block trigger name : *KEY-COMMIT
#exemacro case academic_year is
when '' then message 'Academic Year is mandatory - please enter data';
endtrig;
when others then null;
end case;
Must exist[Y]
#exemacro case academic_term is
when '' then message 'Academic Term is mandatory - please enter data';
endtrig;
when others then null;
end case;
Must exist[Y]
#exemacro case ssn is
```

```
when '' then message 'Cadet SSN is mandatory - please enter data';
endtrig;
when others then null;
end case;
Must exist[Y]
#exemacro commit;
Must exist[Y]
---------- ;Block trigger name : *KEY-DOWN
#exemacro nxtrec;
Must exist[Y]
---------- ;Block trigger name : *KEY-ENTQRY
#exemacro clrrec; entqry;
Must exist[Y]
---------- ;Block trigger name : *KEY-EXEQRY
#exemacro exeqry all;
Must exist[Y]
---------- ;Block trigger name : *KEY-EXIT
#exemacro clrrec; exit;
Must exist[Y]
---------- ;Block trigger name : *KEY-HELP
#exemacro call help2124;
Must exist[Y]
---------- ;Block trigger name : *KEY-NXTFLD
#exemacro nxtfld;
Must exist[Y]
---------- ;Block trigger name : *KEY-NXTREC
#exemacro nxtrec;
Must exist[Y]
---------- ;Block trigger name : *KEY-OTHERS
#exemacro null;
Must exist[Y]
---------- ;Block trigger name : *KEY-PRVREC
#exemacro prvrec;
Must exist[Y]
---------- ;Block trigger name : *KEY-UP
#exemacro prvrec;
Must exist[Y]
---------- ;Field name : ACADEMIC_YEAR
Type[NUMBER]            Lengths: Field[4] / Display[2] / Query[4]
In base table[Y]    In prim key[N]
Page[1]       Line[4]       Column[46]
Enter[Y]      Update[Y]     Mandatory[N]       Fixed len[N]  Auto-jump[N]
    Uppercase[N]
```

```
;Help message : Enter value for : ACADEMIC_YEAR
---------- ;Field name : ACADEMIC_TERM
Type[NUMBER]            Lengths: Field[4] / Display[2] / Query[4]
In base table[Y]    In prim key[N]
Page[1]      Line[5]      Column[46]
Enter[Y]     Update[Y]    Mandatory[N]      Fixed len[N]  Auto-jump[N]
    Uppercase[N]
;Help message : Enter value for : ACADEMIC_TERM
---------- ;Field name : SSN
Type[CHAR]              Lengths: Field[11] / Display[11] / Query[11]
In base table[Y]    In prim key[N]
Page[1]      Line[8]      Column[19]
Enter[Y]     Update[Y]    Mandatory[N]      Fixed len[N]  Auto-jump[N]
    Uppercase[N]
;Help message : Enter value for : SSN
---------- ;Field name : TERM_DEANS_LIST
Type[CHAR]              Lengths: Field[1] / Display[1] / Query[1]
In base table[Y]    In prim key[N]
Page[1]      Line[10]     Column[20]
Enter[Y]     Update[Y]    Mandatory[N]      Fixed len[N]  Auto-jump[N]
    Uppercase[N]
;Help message : Enter value for : TERM_DEANS_LIST
---------- ;Field name : YEAR_TERM_ACTIVE_FLAG
Type[CHAR]              Lengths: Field[1] / Display[1] / Query[1]
In base table[Y]    In prim key[N]
Page[1]      Line[8]      Column[75]
Enter[Y]     Update[Y]    Mandatory[N]      Fixed len[N]  Auto-jump[N]
    Uppercase[N]
;Help message : Enter value for : YEAR_TERM_ACTIVE_FLAG
---------- ;Field name : DEANS_GRAYBK_RECOMM_CODE
Type[CHAR]              Lengths: Field[3] / Display[3] / Query[3]
In base table[Y]    In prim key[N]
Page[1]      Line[9]      Column[73]
Enter[Y]     Update[Y]    Mandatory[N]      Fixed len[N]  Auto-jump[N]
    Uppercase[N]
;Help message : Enter value for : DEANS_GRAYBK_RECOMM_CODE
---------- ;Field name : TQPA_PROBATION_FLAG
Type[CHAR]              Lengths: Field[1] / Display[1] / Query[1]
In base table[Y]    In prim key[N]
Page[1]      Line[10]     Column[75]
Enter[Y]     Update[Y]    Mandatory[N]      Fixed len[N]  Auto-jump[N]
    Uppercase[N]
;Help message : Enter value for : TQPA_PROBATION_FLAG
```

```
---------- ;Field name : TERM_END_GRAYBK_FLAG
Type[CHAR]                Lengths: Field[1] / Display[1] / Query[1]
In base table[Y]     In prim key[N]
Page[1]        Line[11]       Column[75]
Enter[Y]       Update[Y]      Mandatory[N]        Fixed len[N]  Auto-jump[N]
     Uppercase[N]
;Help message : Enter value for : TERM_END_GRAYBK_FLAG
---------- ;Field name : TERM_GENERAL_PERCENTILE
Type[NUMBER]              Lengths: Field[7] / Display[7] / Query[7]
In base table[Y]     In prim key[N]
Page[1]        Line[15]       Column[27]
Enter[Y]       Update[Y]      Mandatory[N]        Fixed len[N]  Auto-jump[N]
     Uppercase[N]
;Help message : Enter value for : TERM_GENERAL_PERCENTILE
---------- ;Field name : TERM_ACADEMIC_PERCENTILE
Type[NUMBER]              Lengths: Field[7] / Display[7] / Query[7]
In base table[Y]     In prim key[N]
Page[1]        Line[15]       Column[64]
Enter[Y]       Update[Y]      Mandatory[N]        Fixed len[N]  Auto-jump[N]
     Uppercase[N]
;Help message : Enter value for : TERM_ACADEMIC_PERCENTILE
---------- ;Field name : TERM_GEN_CREDIT_HRS
Type[NUMBER]              Lengths: Field[7] / Display[7] / Query[7]
In base table[Y]     In prim key[N]
Page[1]        Line[16]       Column[27]
Enter[Y]       Update[Y]      Mandatory[N]        Fixed len[N]  Auto-jump[N]
     Uppercase[N]
;Help message : Enter value for : TERM_GEN_CREDIT_HRS
---------- ;Field name : TERM_ACADEMIC_CREDIT_HRS
Type[NUMBER]              Lengths: Field[7] / Display[7] / Query[7]
In base table[Y]     In prim key[N]
Page[1]        Line[16]       Column[64]
Enter[Y]       Update[Y]      Mandatory[N]        Fixed len[N]  Auto-jump[N]
     Uppercase[N]
;Help message : Enter value for : TERM_ACADEMIC_CREDIT_HRS
---------- ;Field name : TERM_GEN_QUALITY_PTS
Type[NUMBER]              Lengths: Field[8] / Display[8] / Query[8]
In base table[Y]     In prim key[N]
Page[1]        Line[17]       Column[26]
Enter[Y]       Update[Y]      Mandatory[N]        Fixed len[N]  Auto-jump[N]
     Uppercase[N]
;Help message : Enter value for : TERM_GEN_QUALITY_PTS
---------- ;Field name : TERM_ACADEMIC_QUALITY_PTS
```

```
Type[NUMBER]              Lengths: Field[8] / Display[8] / Query[8]
In base table[Y]      In prim key[N]
Page[1]        Line[17]       Column[63]
Enter[Y]       Update[Y]      Mandatory[N]         Fixed len[N]  Auto-jump[N]
     Uppercase[N]
;Help message : Enter value for : TERM_ACADEMIC_QUALITY_PTS
---------- ;Field name : TERM_GENERAL_OM
Type[NUMBER]              Lengths: Field[6] / Display[6] / Query[6]
In base table[Y]      In prim key[N]
Page[1]        Line[18]       Column[28]
Enter[Y]       Update[Y]      Mandatory[N]         Fixed len[N]  Auto-jump[N]
     Uppercase[N]
;Help message : Enter value for : TERM_GENERAL_OM
---------- ;Field name : TERM_ACADEMIC_OM
Type[NUMBER]              Lengths: Field[6] / Display[6] / Query[6]
In base table[Y]      In prim key[N]
Page[1]        Line[18]       Column[65]
Enter[Y]       Update[Y]      Mandatory[N]         Fixed len[N]  Auto-jump[N]
     Uppercase[N]
;Help message : Enter value for : TERM_ACADEMIC_OM
---------- ;Field name : TERM_GEN_QPA
Type[NUMBER]              Lengths: Field[7] / Display[7] / Query[7]
In base table[Y]      In prim key[N]
Page[1]        Line[19]       Column[27]
Enter[Y]       Update[Y]      Mandatory[N]         Fixed len[N]  Auto-jump[N]
     Uppercase[N]
;Help message : Enter value for : TERM_GEN_QPA
---------- ;Field name : TERM_ACAD_QPA
Type[NUMBER]              Lengths: Field[7] / Display[7] / Query[7]
In base table[Y]      In prim key[N]
Page[1]        Line[19]       Column[64]
Enter[Y]       Update[Y]      Mandatory[N]         Fixed len[N]  Auto-jump[N]
     Uppercase[N]
;Help message : Enter value for : TERM_ACAD_QPA
%LINE
2
                  ACADEMIC TERM INFORMATION INSERTION
                               FOR
                        ACADEMIC YEAR
                        ACADEMIC TERM
%LINE
8
                             Term GrayBack Flag: %LINE
```

```
13
         GENERAL INFORMATION                ACADEMIC INFORMATION
%LINE
15
       QPA:                            QPA: %LINE
22
   [F2] for help   [F7] to query  [F10] to save changes  [ESC] to exit
%LINE
1
%BOX
                    p-----------------------------------q
                   |                                     |
                   |                                     |
                   |                                     |
                   |                                     |
                    b-----------------------------------d
%LINE
13
                                      ^^
          <----------------->         vv      <------------------->
                                      ^^
                                      ||
                                      ||
                                      ||
                                      vv
%LINE
21
   p--------------n--------------n--------------n------------------------q
  |               |              |              |                        |
   b--------------u--------------u--------------u------------------------d
%TEXT
%END
```

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