INTEGRATED INFORMATION SUPPORT SYSTEM (IISS) Volume V - Common Data Model Subsystem Part 14 - NDML Precompiler Transform NDML Request from External Schema to Conceptual Schema Product Specification

General Electric Company Production Resources Consulting One River Road Schenectady, New York 12345


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MATERIALS LABORATORY AIR FORCE WRIGHT AERONAUTICAL LABORATORIES AIR FORCE SYSTEMS COMMAND WRIGHT-PATTERSON AFB, OH 45433-6533
This document is the product specification establishing the design implementation of the IISS Configuration Item PRE4 which will transform a neutral data request from the external to conceptual schema.
11. Title

Integrated Information Support System (IISS)
Vol V - Common Data Model Subsystem
Part 14 - NDML Precompiler Transform NDML Request
from External Schema to Conceptual Schema
Product Specification

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This product specification covers the work performed under Air Force Contract F33615-80-C-5155 (ICAM Project 6201). This contract is sponsored by the Materials Laboratory, Air Force Systems Command, Wright-Patterson Air Force Base, Ohio. It was administered under the technical direction of Mr. Gerald C. Shumaker, ICAM Program Manager, Manufacturing Technology Division, through Project Manager, Mr. David Judson. The Prime Contractor was Production Resources Consulting of the General Electric Company, Schenectady, New York, under the direction of Mr. Alan Rubenstein. The General Electric Project Manager was Mr. Myron Hurlbut of Industrial Automation Systems Department, Albany, New York.

Certain work aimed at improving Test Bed Technology has been performed by other contracts with Project 6201 performing integrating functions. This work consisted of enhancements to Test Bed software and establishment and operation of Test Bed hardware and communications for developers and other users. Documentation relating to the Test Bed from all of these contractors and projects have been integrated under Project 6201 for publication and treatment as an integrated set of documents. The particular contributors to each document are noted on the Report Documentation Page (DD1473). A listing and description of the entire project documentation system and how they are related is contained in document FTR620100001, Project Overview.

The subcontractors and their contributing activities were as follows:

**TASK 4.2**

<table>
<thead>
<tr>
<th>Subcontractors</th>
<th>Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boeing Military Aircraft Company (BMAC)</td>
<td>Reviewer</td>
</tr>
<tr>
<td>D. Appleton Company (DACOM)</td>
<td>Responsible for IDEF support, state-of-the-art literature search</td>
</tr>
<tr>
<td>General Dynamics/ Ft. Worth</td>
<td>Responsible for factory view function and information models</td>
</tr>
</tbody>
</table>
**Subcontractors**

<table>
<thead>
<tr>
<th>Illinois Institute of Technology</th>
<th>Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>North American Rockwell</td>
<td>Reviewer</td>
</tr>
<tr>
<td>Northrop Corporation</td>
<td>Responsible for factory view function and information models</td>
</tr>
<tr>
<td>Pritsker and Associates</td>
<td>Responsible for IDEF2 support</td>
</tr>
<tr>
<td>SofTech</td>
<td>Responsible for IDEF0 support</td>
</tr>
</tbody>
</table>

**TASKS 4.3 - 4.9 (TEST BED)**

<table>
<thead>
<tr>
<th>Subcontractors</th>
<th>Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boeing Military Aircraft Company (BMAC)</td>
<td>Responsible for consultation on applications of the technology and on IBM computer technology.</td>
</tr>
<tr>
<td>Computer Technology Associates (CTA)</td>
<td>Assisted in the areas of communications systems, system design and integration methodology, and design of the Network Transaction Manager.</td>
</tr>
<tr>
<td>Control Data Corporation (CDC)</td>
<td>Responsible for the Common Data Model (CDM) implementation and part of the CDM design (shared with DACOM).</td>
</tr>
<tr>
<td>D. Appleton Company (DACOM)</td>
<td>Responsible for the overall CDM Subsystem design integration and test plan, as well as part of the design of the CDM (shared with CDC). DACOM also developed the Integration Methodology and did the schema mappings for the Application Subsystems.</td>
</tr>
<tr>
<td>Subcontractors</td>
<td>Role</td>
</tr>
<tr>
<td>----------------------------------------------------</td>
<td>----------------------------------------------------------------------</td>
</tr>
<tr>
<td>Digital Equipment Corporation (DEC)</td>
<td>Consulting and support of the performance testing and on DEC software and computer systems operation.</td>
</tr>
<tr>
<td>McDonnell Douglas Automation Company (McAuto)</td>
<td>Responsible for the support and enhancements to the Network Transaction Manager Subsystem during 1984/1985 period.</td>
</tr>
<tr>
<td>On-Line Software International (OSI)</td>
<td>Responsible for programming the Communications Subsystem on the IBM and for consulting on the IBM.</td>
</tr>
<tr>
<td>Rath and Strong Systems Products (RSSP) (In 1985 became McCormack &amp; Dodge)</td>
<td>Responsible for assistance in the implementation and use of the MRP II package (PIOS) that they supplied.</td>
</tr>
<tr>
<td>SofTech, Inc.</td>
<td>Responsible for the design and implementation of the Network Transaction Manager (NTH) in 1981/1984 period.</td>
</tr>
<tr>
<td>Software Performance Engineering (SPE)</td>
<td>Responsible for directing the work on performance evaluation and analysis.</td>
</tr>
<tr>
<td>Structural Dynamics Research Corporation (SDRC)</td>
<td>Responsible for the User Interface and Virtual Terminal Interface Subsystems.</td>
</tr>
</tbody>
</table>

Other prime contractors under other projects who have contributed to Test Bed Technology, their contributing activities and responsible projects are as follows:

<table>
<thead>
<tr>
<th>Contractors</th>
<th>ICAM Project</th>
<th>Contributing Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boeing Military Aircraft Company (BMAC)</td>
<td>1701, 2201, 2202</td>
<td>Enhancements for IBM node use. Technology Transfer to Integrated Sheet Metal Center (ISMC)</td>
</tr>
<tr>
<td>Contractors</td>
<td>ICAM Project</td>
<td>Contributing Activities</td>
</tr>
<tr>
<td>--------------------------------</td>
<td>--------------</td>
<td>-----------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Control Data Corporation (CDC)</td>
<td>1502, 1701</td>
<td>IISS enhancements to Common Data Model Processor (CDMP)</td>
</tr>
<tr>
<td>D. Appleton Company (DACOM)</td>
<td>1502</td>
<td>IISS enhancements to Integration Methodology</td>
</tr>
<tr>
<td>General Electric</td>
<td>1502</td>
<td>Operation of the Test Bed and communications equipment.</td>
</tr>
<tr>
<td>Hughes Aircraft Company (HAC)</td>
<td>1701</td>
<td>Test Bed enhancements</td>
</tr>
<tr>
<td>Structural Dynamics Research Corporation (SDRC)</td>
<td>1502, 1701, 1703</td>
<td>IISS enhancements to User Interface/Virtual Terminal Interface (UI/VTI)</td>
</tr>
</tbody>
</table>
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SECTION 1

SCOPE

1.1 Identification

This specification establishes the design of Function PRE4, Transform ES/CS, one of the major functions of the Configuration Item "Precompiler" to be built and formally accepted by the ICAN program Office. This CI constitutes one of the subsystems of the Common Data Model Processor (CDMP).

1.2 Functional Summary

The purpose of this Computer Program Configuration Item (CPCI) is to convert an NDML request, expressed in an external schema, and to terminate one or more NDML requests expressed in conceptual schema terms. The following functions will be performed by this CPCI:

1. Translate each user view into the corresponding entity classes and each data item into the corresponding attribute use class.

2. Identify the relational join operations needed to construct each user view table.

3. Identify the integrity tests that will be employed with each NDML update request.
SECTION 2

DOCUMENTS

2.1 Reference Documents


2.2 Terms and Abbreviations

Attribute Use Class: (AUC)

Conceptual Schema: (CS)

Common Data Model Processor: (CDMP)

Common Data Model: (CDM) Describes common data application process formats, form definitions, etc., of the IISS and includes conceptual schema, external, internal schemas, and schema transformation operators.

Data Field: (DF) An element of data in the external schema. It is by this name that an NDML programmer reference
data.

**Database Management System:** (DBMS)

**Distributed Request Supervisor:** (DRS) This IISS CDM subsystem configuration item controls the execution of distributed NDML queries and non distributed updates.

**Domain:** A logical definition of legal attribute class values.

**Domain Constraint:** Predicate that applies to a single domain.

**External Schema:** (ES)

**Forms:** Structured views which may be imposed on windows or other forms. A form is composed of fields where each field is a form, item, or window.

**Forms Processor:** (FP) A set of callable execution time routines available to an application program for form processing.

**Internal Schema:** (IS)

**Integrated Information Support System:** (IISS) A test computing environment used to investigate, demonstrate and test the concepts of information management and information integration in the context of Aerospace Manufacturing. The IISS addresses the problems of integration of data resident on heterogeneous databases supported by heterogeneous computers interconnected via a local Area Network.

**Mapping:** The correspondence of independent objects in two schemas: ES to CS or CS to IS.

**Network Transaction Manager:** (NTM) Performs the coordination, communication and housekeeping functions required to integrate the application processes and system services resident on the various hosts into a cohesive system.

**Neutral Data Manipulation Language:** (NDML) A language developed by the IISS project to provide uniform access to common data, regardless of database manager or distribution criteria. It provides distributed retrieved and single node updates.
ORACLE: Relational DBMS based on the SQL (Structured Query Language, a product of ORACLE Corp, Menlo Park, CA). The CDM is an ORACLE database.

Parcel: A sequential file containing sections source code of the input application program.

Request Processor: (RP) A COBOL program that will satisfy a retrieval or update NDML subtransaction against a particular Database Management System.

User Interface: (UI) Controls the user's terminal and interfaces with the rest of the system.

Virtual Terminal Interface: (VTI) Performs the interfacing between different terminals and the UI. This is done by defining a specific set of terminal features and protocols which must be supported by UI software which constitutes the Virtual Terminal Definition. Specific terminals are then mapped against the Virtual Terminal software by specific software modules written for each type of real terminal supported.
SECTION 3

REQUIREMENTS

3.1 Structural Description

A graphic portrayal of this CPCI is included in Section 3.10. This chart shows the hierarchical relationship of each module making up this CPCI.

This CPCI uses a number of lower level modules to handle specific operations such as:

1. Verifying the user view (CDVIEW).
2. Verifying user data items (CDEMO).
3. Determining all data items in a view (CDEMDA).
4. Match view names with view abbreviations (CDABVW).
5. Determine if a partial entity class was inserted (CDPTEC).
6. Determine if a data item is mapped to conceptual schema (CDEPDI).
7. Look up meta data for a conceptual attribute (CDCMD).
8. Determine if a view maps to multiple entities (CDNNEC).
9. Develop type 1 integrity test (CD1NEC, CD1RIT).
10. Develop key uniqueness integrity test (CDKYUQ).
11. Check for modification of a partial inherited key class (CDMPK).
12. Develop type 2 integrity test (CD2RIT).

3.2 Functional Flow

This CPCI implements the logic defined in the Development Specification for this CPCI. Details of inputs/outputs and
relationships between modules are to be found in Section 3.10.

This CPCI has been designated to operate in a batch or interactive mode. It must operate in the system environment established for IISS; that is, use of the Network Transaction Manager. It must use the ORACLE DBMS installed on a DEC VAX computer.
3.3 Interfaces

The following diagram depicts the interface of PRE4 with other CPCIs in the system.

```
+---------+
|         |
| PRE2    |
| PS41212 |
+---------+
|         |
| PRE3    |
| PS41213 |
+---------+
|         |
| PRE4    |
|         |
+---------+
|         |
| PRE5    |
| PS41232 |
+---------+
```

3.3.1 Inputs/Outputs

The following table depicts the inputs and outputs of this CPCi. A detailed description for each item can be found in the DS for this CPCI.

<table>
<thead>
<tr>
<th>INPUT</th>
<th>OUTPUT</th>
</tr>
</thead>
<tbody>
<tr>
<td>ES Qualify List</td>
<td></td>
</tr>
<tr>
<td>ES Action List</td>
<td></td>
</tr>
<tr>
<td>User View Abbreviation List</td>
<td></td>
</tr>
<tr>
<td>Parcel 1 File Name</td>
<td></td>
</tr>
<tr>
<td>Parcel 2 File Name</td>
<td></td>
</tr>
<tr>
<td>Parcel 3 File Name</td>
<td></td>
</tr>
<tr>
<td>Parcel 4 File Name</td>
<td></td>
</tr>
<tr>
<td>Oracle Logon Data Area</td>
<td></td>
</tr>
<tr>
<td>Error File Name</td>
<td></td>
</tr>
<tr>
<td>Host of the precompiler</td>
<td></td>
</tr>
<tr>
<td>Hcst the AP is to run on</td>
<td></td>
</tr>
<tr>
<td>Source Language</td>
<td></td>
</tr>
<tr>
<td>Code generator table</td>
<td></td>
</tr>
</tbody>
</table>

3-3
I/O Status indicator
Error count
3.4 **Program Interrupts**

Not applicable to this CPCI.

3.5 **Timing and Sequencing Description**

This CPCI is called for each NDML statement parsed by PRE3 and identified to be semantically correct by PRE2. Thus, PRE4 may execute many times in a precompiler run. PRE 4 in turn calls PRE5 for each conceptual request. A conceptual request is either the original user NDML request or referential integrity tests, which are implemented as a conceptual schema retrievals.

3.6 **Special Control Features**

Not applicable to this CPCI.

3.7 **Storage Allocation**

3.7.1 **Database Definition**

The database used by this CPCI is the Common Data Model (CDM) database. This model is defined by the CDM1, the IDEF-1 model of the CDM, Reference Document Number 3.

3.7.1.1 **File Description**

No permanent files have been defined for this CPCI. It may use temporary scratch files for such things as generated program source code or temporary query results.

3.7.1.2 **Table Description**

All tables used by this CPCI have been defined by the Development Specification for this CPCI.

3.7.1.3 **Item Description**

Not applicable to this CPCI.
3.8 Object Code Creation

The object code for this CPCI will be created by the system integration test team by using defined IISS Software Configuration Management procedures. This CPCI will use the COBOL language compilers.

3.9 Adaptation Data

This CPCI has been coded using ANSI COBOL language. The intent was to provide a transportable system. Any system environment supporting this language, a virtual memory management scheme, the COMM and NTM subsystems of IISS and the ORACLE Database Management System should be able to support this CPCI. Every possible attempt has been made to localize and identify any machine or environment dependent modules through the original design of the IISS and application of Configuration Management Procedures.

3.10 Details Design Description

The following sections have been computer generated for this CPCI.

3.10.1 Main Program List

The following is a list of all "Main Programs" which are modules that are not called by any other module being documented here. These modules are either program entry points or, if they are hooked into another set of programs via subroutine calls, they are the points the external programs can call and therefore enter through. To differentiate between the two types of entry points, look at the individual Module Documentation (section 3.10.8) and look at Module Type for each of the Main Program modules listed. Note whether the routine is a Program, Subroutine, or Function. If it is a Program, it is truly a main program entry point. If not, then it is merely called by other programs not being documented here.
## TRANSFORM ES TO CS Main Program List

<table>
<thead>
<tr>
<th>Module Name</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>CDPRE4</td>
<td>EXTERNAL SCHEMA/CONCEPTUAL SCHEMA TRANSFORMATION</td>
</tr>
</tbody>
</table>
3.10.2 Module List

The following is a list of the modules being documented here along with their purpose. Each module has a unique name, no matter what language it was written in.
## TRANSFORM ES TO CS Module List

<table>
<thead>
<tr>
<th>Module Name</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>CD1RIT</td>
<td>PERFORMS SQL SEARCH OF RC TABLE TO EXTRACT IND EC_NO</td>
</tr>
<tr>
<td>CD2RIT</td>
<td>SETS UP TYPE 2 REFERENTIAL INTEGRITY CHECK</td>
</tr>
<tr>
<td>CDABVW</td>
<td>CDABVW-GET THE VIEW NUMBER GIVEN THE USER ENTERED ABBREVIATION</td>
</tr>
<tr>
<td>CDACAL</td>
<td>ADD ROWS TO THE CS-ACTION-LIST</td>
</tr>
<tr>
<td>CDACAQ</td>
<td>ADD ROW TO CS ACTION LIST AND CS QUALIFY LIST AND TYPE 1 RIT</td>
</tr>
<tr>
<td>CDATXL</td>
<td>ADD ROW TO TEMP-XFORM-LIST</td>
</tr>
<tr>
<td>CDCMD</td>
<td>USING TAG NO FOR AUC DETERMINS CS DATA TYPE/SIZE/DEC DIG</td>
</tr>
<tr>
<td>CDEMD</td>
<td>RETRIEVE EXTERNAL METADATA AND DATA ITEM NUMBER</td>
</tr>
<tr>
<td>CDEMDA</td>
<td>EXPAND ES ACTION LIST TO HOLD ALL DI NAMES FOR A USER VIEW</td>
</tr>
<tr>
<td>CDINEC</td>
<td>RETRIEVE IND ENT FOR DEP ENT AND PERFORM TYPE1 REF INTEG TEST</td>
</tr>
<tr>
<td>CDKYUQ</td>
<td>SET UP KEY UNIQUENESS TEST FOR AN ENTITY</td>
</tr>
<tr>
<td>CDMPIK</td>
<td>CHECK FOR MODIFICATION OF PARTIAL INHERITED KEY</td>
</tr>
<tr>
<td>CDNNEC</td>
<td>DETERMINE IF THE VIEW OR DATA ITEMS MAP TO MULTIPLE ENTITY CLASSES</td>
</tr>
<tr>
<td>CDPDI</td>
<td>VERIFY THE EXISTENCE A MAPPED DATA ITEM</td>
</tr>
<tr>
<td>CDPRE4</td>
<td>EXTERNAL SCHEMA/CONCEPTUAL SCHEMA TRANSFORMATION</td>
</tr>
</tbody>
</table>
# TRANSFORM ES TO CS Module List

<table>
<thead>
<tr>
<th>Module Name</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>CDPTEC</td>
<td>DETERMINE WHETHER VIEW MAPS TO PART OF AN ENTITY CLASS</td>
</tr>
<tr>
<td>CDRCNR</td>
<td>OBTAIN RELATION CLASS NUMBER FOR NOT IN SET OPERATION</td>
</tr>
<tr>
<td>CDRCTG</td>
<td>GET THE RC AND OWNER TAG OF AN INHERITED ATTRIBUTE</td>
</tr>
<tr>
<td>CDTGVW</td>
<td>RETRIEVE ALL TAGS TO WHICH A VIEW MAPS</td>
</tr>
<tr>
<td>CDTUXL</td>
<td>UPDATE A ROW OF THE TEMP-XFORM-LIST</td>
</tr>
<tr>
<td>CDVIEW</td>
<td>VERIFY THE EXISTENCE OF A VIEW IN THE CDM</td>
</tr>
<tr>
<td>CDVTGK</td>
<td>VERIFY THAT A TEMP-AUC IS NOT A KEY CLASS MEMBER</td>
</tr>
</tbody>
</table>
3.10.3 External Routines List

The following is a list of all routines or functions not documented here that are called by modules that are documented here. The first caller, in alphabetical order, is listed as well. The specification in which any module is documented may be found in the Module Documentation Index (Document Number CM 620100001). See section 3.10.6 for a list of the modules that call each of these external routines.
# TRANSFORM ES TO CS External Routines List

<table>
<thead>
<tr>
<th>Module Name</th>
<th>First User</th>
</tr>
</thead>
<tbody>
<tr>
<td>CDP4A</td>
<td>CDPRE4</td>
</tr>
<tr>
<td>CDPRE6</td>
<td>CDPRE4</td>
</tr>
<tr>
<td>ERRPRO</td>
<td>CDINEC</td>
</tr>
<tr>
<td>OBINDN</td>
<td>CDPTEC</td>
</tr>
<tr>
<td>OCLOSE</td>
<td>CDCMD</td>
</tr>
<tr>
<td>ODFINN</td>
<td>CDVTGK</td>
</tr>
<tr>
<td>OEXEC</td>
<td>CDPRE4</td>
</tr>
<tr>
<td>OFETCH</td>
<td>CDPTEC</td>
</tr>
<tr>
<td>OPEN</td>
<td>CDCMD</td>
</tr>
<tr>
<td>OSQL3</td>
<td>CDMP1K</td>
</tr>
<tr>
<td>RPTERR</td>
<td>CDEMD</td>
</tr>
</tbody>
</table>
3.10.4 Include File List

The following is a list of all include files called in by modules being documented here. Each include file has a unique name regardless of the language being used. The purpose of each include file is listed as well. A more complete description of each include file is given in section 3.10.9. The purpose listed is the one that is in the source code of the include file.

A purpose of "***** PURPOSE NOT FOUND BY STRIPPER *****" indicates that a purpose statement was not written into the include file itself. The most common reason for this is that the include file comes from system libraries that were not developed by the project, such as 'C' libraries that are provided with the 'C' compiler.

See section 3.10.6 for a set of lists which show all the modules which call in each of these include files.
**TRANSFORM ES TO CS Include File List**

<table>
<thead>
<tr>
<th>File Name</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>CEWORK</td>
<td>CS TO ES WORK LIST INFORMATION</td>
</tr>
<tr>
<td>CGTABLE</td>
<td>CODE GENERATING TABLE- TRACKS ALL GENERATED SOFTWARE</td>
</tr>
<tr>
<td>CHKCDM</td>
<td>IISS CDMP CHECK STATUS CODES</td>
</tr>
<tr>
<td>CSAL</td>
<td>CONCEPTUAL SCHEMA ACTION LIST</td>
</tr>
<tr>
<td>GSQUAL</td>
<td>CONCEPTUAL SCHEMA QUALIFY LIST</td>
</tr>
<tr>
<td>ERRCDM</td>
<td>IISS ERROR STATUS CODES FOR CDMP MODULES</td>
</tr>
<tr>
<td>ERRPRO</td>
<td>PROCESS ERROR INCLUDE FILE</td>
</tr>
<tr>
<td>ESAL</td>
<td>EXTERNAL SCHEMA ACTION LIST</td>
</tr>
<tr>
<td>ESQUAL</td>
<td>EXTERNAL SCHEMA QUALIFY LIST</td>
</tr>
<tr>
<td>ORCLEDA</td>
<td>WS DEFINITION FOR THE ORACLE LOGIN AREA</td>
</tr>
<tr>
<td>SDLIST</td>
<td>SEC-DECOMPOSITION-LIST</td>
</tr>
<tr>
<td>TJLIST</td>
<td>TEMP JOIN LIST</td>
</tr>
<tr>
<td>TXLIST</td>
<td>TEMP TRANSFORM LIST</td>
</tr>
<tr>
<td>UVABBRUSER</td>
<td>VIEW ABBREVIATION LIST</td>
</tr>
</tbody>
</table>
3.10.5 Where Include File Used List

The following lists each include file from 3.10.4 and all the modules documented in this specification which include them. The purpose of each module is listed as well.
TRANSFORM ES TO CS Where-include-file-used List

<table>
<thead>
<tr>
<th>Include File</th>
<th>Module</th>
<th>Module Name</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>CEWORK</td>
<td></td>
</tr>
<tr>
<td></td>
<td>CD1RIT</td>
<td>PERFORMS SQL SEARCH OF RC TABLE TO EXTRACT IND EC NO</td>
<td></td>
</tr>
<tr>
<td></td>
<td>CD2RIT</td>
<td>SETS UP TYPE 2 REFERENTIAL INTEGRITY CHECK</td>
<td></td>
</tr>
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<td>CDATXL</td>
<td>ADD ROW TO TEMP-XFORM-LIST</td>
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<td>USING TAG NO FOR AUC DETERMINS CS DATA TYPE/SIZE/DEC DIG</td>
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3-16
TRANSFORM ES TO CS Where-include-file-used List

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<td>RETRIEVE EXTERNAL METADATA AND DATA ITEM NUMBER</td>
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<td>CDEMDA</td>
<td>EXPAND ES ACTION LIST TO HOLD ALL DI NAMES FOR A USER VIEW</td>
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<td>CDINEC</td>
<td>RETRIEVE IND ENT FOR DEP ENT AND PERFORM TYPE1 REF INTEG TEST</td>
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<tr>
<td>CDKYUQ</td>
<td>SET UP KEY UNIQUENESS TEST FOR AN ENTITY</td>
<td></td>
</tr>
<tr>
<td>CDMPIK</td>
<td>CHECK FOR MODIFICATION OF PARTIAL INHERITED KEY</td>
<td></td>
</tr>
<tr>
<td>CDPDI</td>
<td>VERIFY THE EXISTENCE A MAPPED DATA ITEM</td>
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</tr>
<tr>
<td>CDPRE4</td>
<td>EXTERNAL SCHEMA/CONCEPTUAL SCHEMA TRANSFORMATION</td>
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</tr>
<tr>
<td>CDPTEC</td>
<td>DETERMINE WHETHER VIEW MAPS TO PART OF AN ENTITY CLASS</td>
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</tr>
<tr>
<td>CDRCNR</td>
<td>OBTAIN RELATION CLASS NUMBER FOR NOT IN SET OPERATION</td>
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<tr>
<td>CDRCTG</td>
<td>GET THE RC AND OWNER TAG OF AN INHERITED ATTRIBUTE</td>
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</tr>
<tr>
<td>CDTGWV</td>
<td>RETRIEVE ALL TAGS TO WHICH A VIEW MAPS</td>
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<tr>
<td>CDVIEW</td>
<td>VERIFY THE EXISTENCE OF A VIEW IN THE CDM</td>
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<tr>
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<td>VERIFY THAT A TEMP-AUC IS NOT A KEY CLASS MEMBER</td>
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CSAL

<table>
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<td>PERFORMS SQL SEARCH OF RC TABLE TO EXTRACT IND EC NO</td>
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<td>CD2RIT</td>
<td>SETS UP TYPE 2 REFERENTIAL INTEGRITY CHECK</td>
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<tr>
<td>CDACAL</td>
<td>ADD ROWS TO THE CS-ACTION-LIST</td>
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<td>CDACAQ</td>
<td>ADD ROW TO CS ACTION LIST AND CS QUALIFY LIST AND TYPE 1 RIT</td>
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<td>CDINEC</td>
<td>RETRIEVE IND ENT FOR DEP ENT AND PERFORM TYPE1 REF INTEG TEST</td>
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<td>CDKYUQ</td>
<td>SET UP KEY UNIQUENESS TEST FOR AN ENTITY</td>
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<td>CDPRE4</td>
<td>EXTERNAL SCHEMA/CONCEPTUAL SCHEMA TRANSFORMATION</td>
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**TRANSFORM ES TO CS Where-include-file-used List**

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<td>CSQUAL</td>
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<td></td>
<td>CD1RIT</td>
<td>Performs SQL Search of RC Table to Extract Ind EC No</td>
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<tr>
<td></td>
<td>CD2RIT</td>
<td>Sets Up Type 2 Referential Integrity Check</td>
</tr>
<tr>
<td></td>
<td>CDACAQ</td>
<td>Add Row to CS Action List and CS Qualify List and Type 1 RIT</td>
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<tr>
<td></td>
<td>CDINEC</td>
<td>Retrieve Ind Ent for Dep Ent and Perform Type 1 Ref Integ Test</td>
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<tr>
<td></td>
<td>CDKYUQ</td>
<td>Set Up Key Uniqueness Test for an Entity</td>
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<td>CDPRE4</td>
<td>External Schema/Conceptual Schema Transformation</td>
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<td>ERRCDM</td>
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<td>CD1RIT</td>
<td>Performs SQL Search of RC Table to Extract Ind EC No</td>
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<td>CD2RIT</td>
<td>Sets Up Type 2 Referential Integrity Check</td>
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<td>Add Rows to the CS-Action-List</td>
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<td>CDACAQ</td>
<td>Add Row to CS Action List and CS Qualify List and Type 1 RIT</td>
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<tr>
<td></td>
<td>CDATXL</td>
<td>Add Row to Temp-Xform-List</td>
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<td></td>
<td>CDCMD</td>
<td>Using Tag No for AUC Determines CS Data Type/Size/Dec Dig</td>
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<td>CDEMMD</td>
<td>Retrieve External Metadata and Data Item Number</td>
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<td>CDEMMDA</td>
<td>Expand ES Action List to Hold All DI Names for a User View</td>
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<tr>
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<td>CDINEC</td>
<td>Retrieve Ind Ent for Dep Ent and Perform Type 1 Ref Integ Test</td>
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<td></td>
<td>CDKYUQ</td>
<td>Set Up Key Uniqueness Test for an Entity</td>
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<tr>
<td></td>
<td>CDMPIK</td>
<td>Check for Modification of Partial Inherited Key</td>
</tr>
<tr>
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<td>CDPDI</td>
<td>Verify the Existence a Mapped Data Item</td>
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3-18
**TRANSFORM** ES TO CS Where-ininclude-file-used List

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<td>DETERMINE WHETHER VIEW MAPS TO PART OF AN ENTITY CLASS</td>
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<tr>
<td>CDRCNR</td>
<td>OBTAIN RELATION CLASS NUMBER FOR NOT IN SET OPERATION</td>
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<tr>
<td>CDRCTG</td>
<td>GET THE RC AND OWNER TAG OF AN INHERITED ATTRIBUTE</td>
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<tr>
<td>CDTGWV</td>
<td>RETRIEVE ALL TAGS TO WHICH A VIEW MAPS</td>
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<tr>
<td>CDVIEW</td>
<td>VERIFY THE EXISTENCE OF A VIEW IN THE CDM</td>
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<tr>
<td>CDVTGK</td>
<td>VERIFY THAT A TEMP-AUC IS NOT A KEY CLASS MEMBER</td>
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**ERRPRO**

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<th>Purpose</th>
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<tr>
<td>CD1RIT</td>
<td>PERFORMS SQL SEARCH OF RC TABLE TO EXTRACT IND EC NO</td>
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<td>SETS UP TYPE 2 REFERENTIAL INTEGRITY CHECK</td>
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<td>ADD ROWS TO THE CS-ACTION-LIST</td>
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<td>ADD ROW TO TEMP-XFORM-LIST</td>
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<td>USING TAG NO FOR AUC DETERMINS CS DATA TYPE/SIZE/DEC DIG</td>
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<td>CDEMD</td>
<td>RETRIEVE EXTERNAL METADATA AND DATA ITEM NUMBER</td>
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<td>EXPAND ES ACTION LIST TO HOLD ALL DI NAMES FOR A USER VIEW</td>
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<tr>
<td>CDINEC</td>
<td>RETRIEVE IND ENT FOR DEP ENT AND PERFORM TYPE1 REF INTEG TEST</td>
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<tr>
<td>CDKYUQ</td>
<td>SET UP KEY UNIQUENESS TEST FOR AN ENTITY</td>
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<tr>
<td>CDMPIK</td>
<td>CHECK FOR MODIFICATION OF PARTIAL INHERITED KEY</td>
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TRANSFORM ES TO GS Where-include-file-used List

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<td>RETRIEVE ALL TAGS TO WHICH A VIEW MAPS</td>
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<td>VERIFY THE EXISTENCE OF A VIEW IN THE CDM</td>
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ESAL

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<td>PERFORMS SQL SEARCH OF RC TABLE TO EXTRACT IND EC NO</td>
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<td>CD2RIT</td>
<td>SETS UP TYPE 2 REFERENTIAL INTEGRITY CHECK</td>
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<td>ADD ROWS TO THE CS-ACTION-LIST</td>
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<td>EXPAND ES ACTION LIST TO HOLD ALL DI NAMES FOR A USER VIEW</td>
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<td>RETRIEVE IND ENT FOR DEP ENT AND PERFORM TYPE1 REF INTEG TEST</td>
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## TRANSFORM ES TO CS Where-include-file-used List

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<td>CDKYUQ</td>
<td>SET UP KEY UNIQUENESS TEST FOR AN ENTITY</td>
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**ORCLEDA**

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3-21
**TRANSFORM ES TO CS Where-include-file-used List**

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<th>Module Purpose</th>
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<td>ADD ROW TO TEMP-XFORM-LIST</td>
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<td>KYUQ</td>
<td>SET UP KEY UNIQUENESS TEST FOR AN ENTITY</td>
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<tr>
<td>MPIK</td>
<td>CHECK FOR MODIFICATION OF PARTIAL INHERITED KEY</td>
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<td>NNEC</td>
<td>DETERMINE IF THE VIEW OR DATA ITEMS MAP TO MULTIPLE ENTITY CLASSES</td>
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<td>VERIFY THAT A TEMP-AUC IS NOT A KEY CLASS MEMBER</td>
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</table>

**UVABBR**

| CD1RIT       | PERFORMS SQL SEARCH OF RC TABLE TO EXTRACT IND EC NO |
| CD2RIT       | SETS UP TYPE 2 REFERENTIAL INTEGRITY CHECK |
| ABVW         | CDABVW-GET THE VIEW NUMBER GIVEN THE USER ENTERED ABBREVIATION |
| ACAQ         | ADD ROW TO CS ACTION LIST AND CS QUALIFY LIST AND TYPE 1 RIT |
| DINEC        | RETRIEVE IND ENT FOR DEP ENT AND PERFORM TYPE1 REF INTEG TEST |
| KYUQ         | SET UP KEY UNIQUENESS TEST FOR AN ENTITY |
| NNEC         | DETERMINE IF THE VIEW OR DATA ITEMS MAP TO MULTIPLE ENTITY CLASSES |
| PRE4         | EXTERNAL SCHEMA/CONCEPTUAL SCHEMA TRANSFORMATION |
3.10.6 Where External Routine Used List

The following lists each external function or routine listed in 3.10.3 and all the documented modules which call it. The purpose of each module is listed as well.
TRANSFORM ES TO CS Where-external-routine-used List

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<td>ADD ROW TO CS ACTION LIST AND CS QUALIFY LIST AND TYPE 1 RIT</td>
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<td>ADD ROW TO CS ACTION LIST AND CS QUALIFY LIST AND TYPE 1 RIT</td>
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<td>ADD ROW TO TEMP-XFORM-LIST</td>
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<td>CDEMD</td>
<td>RETRIEVE EXTERNAL METADATA AND DATA ITEM NUMBER</td>
</tr>
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<td>CDEMDA</td>
<td>EXPAND ES ACTION LIST TO HOLD ALL DI NAMES FOR A USER VIEW</td>
</tr>
<tr>
<td></td>
<td>CDMINC</td>
<td>RETRIEVE IND ENT FOR DEP ENT AND PERFORM TYPE1 REF INTEG TEST</td>
</tr>
<tr>
<td></td>
<td>CDKYUQ</td>
<td>SET UP KEY UNIQUENESS TEST FOR AN ENTITY</td>
</tr>
<tr>
<td></td>
<td>CDMPIK</td>
<td>CHECK FOR MODIFICATION OF PARTIAL INHERITED KEY</td>
</tr>
<tr>
<td></td>
<td>CDPDI</td>
<td>VERIFY THE EXISTENCE A MAPPED DATA ITEM</td>
</tr>
<tr>
<td></td>
<td>CDPRE4</td>
<td>EXTERNAL SCHEMA/CONCEPTUAL SCHEMA TRANSFORMATION</td>
</tr>
<tr>
<td></td>
<td>CDPTEC</td>
<td>DETERMINE WHETHER VIEW MAPS TO PART OF AN ENTITY CLASS</td>
</tr>
<tr>
<td>System Module Name</td>
<td>Module Purpose</td>
<td></td>
</tr>
<tr>
<td>--------------------</td>
<td>----------------</td>
<td></td>
</tr>
<tr>
<td>CDRCNR</td>
<td>OBTAIN RELATION CLASS NUMBER FOR NOT IN SET OPERATION</td>
<td></td>
</tr>
<tr>
<td>CDRCTG</td>
<td>GET THE RC AND OWNER TAG OF AN INHERITED ATTRIBUTE</td>
<td></td>
</tr>
<tr>
<td>CDTGVW</td>
<td>RETRIEVE ALL TAGS TO WHICH A VIEW MAPS</td>
<td></td>
</tr>
<tr>
<td>CDVIEW</td>
<td>VERIFY THE EXISTENCE OF A VIEW IN THE CDM</td>
<td></td>
</tr>
<tr>
<td>CDVTGK</td>
<td>VERIFY THAT A TEMP-AUC IS NOT A KEY CLASS MEMBER</td>
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**OBINDN**

<table>
<thead>
<tr>
<th>System Module Name</th>
<th>Module Purpose</th>
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<tbody>
<tr>
<td>CD1RIT</td>
<td>PERFORMS SQL SEARCH OF RC TABLE TO EXTRACT IND EC NO</td>
</tr>
<tr>
<td>CD2RIT</td>
<td>SETS UP TYPE 2 REFERENTIAL INTEGRITY CHECK</td>
</tr>
<tr>
<td>CDCMD</td>
<td>USING TAG NO FOR AUC DETERMINES CS DATA TYPE/SIZE/DEC DIG</td>
</tr>
<tr>
<td>CDEMD</td>
<td>RETRIEVE EXTERNAL METADATA AND DATA ITEM NUMBER</td>
</tr>
<tr>
<td>CDEMDA</td>
<td>EXPAND ES ACTION LIST TO HOLD ALL DI NAMES FOR A USER VIEW</td>
</tr>
<tr>
<td>CDINEC</td>
<td>RETRIEVE IND ENT FOR DEP ENT AND PERFORM TYPE1 REF INTEG TEST</td>
</tr>
<tr>
<td>CDKYUQ</td>
<td>SET UP KEY UNIQUENESS TEST FOR AN ENTITY</td>
</tr>
<tr>
<td>CDMPIK</td>
<td>CHECK FOR MODIFICATION OF PARTIAL INHERITED KEY</td>
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<tr>
<td>CDPDI</td>
<td>VERIFY THE EXISTENCE A MAPPED DATA ITEM</td>
</tr>
<tr>
<td>CDPRE4</td>
<td>EXTERNAL SCHEMA/CONCEPTUAL SCHEMA TRANSFORMATION</td>
</tr>
<tr>
<td>CDPTEC</td>
<td>DETERMINE WHETHER VIEW MAPS TO PART OF AN ENTITY CLASS</td>
</tr>
<tr>
<td>CDRCNR</td>
<td>OBTAIN RELATION CLASS NUMBER FOR NOT IN SET OPERATION</td>
</tr>
<tr>
<td>CDRCTG</td>
<td>GET THE RC AND OWNER TAG OF AN INHERITED ATTRIBUTE</td>
</tr>
<tr>
<td>CDTGVW</td>
<td>RETRIEVE ALL TAGS TO WHICH A VIEW MAPS</td>
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<td>CDVIEW</td>
<td>VERIFY THE EXISTENCE OF A VIEW IN THE CDM</td>
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<tr>
<td>CDVTGK</td>
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TRANSFORM ES TO CS Where-external-routine-used List

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<th>Module Name</th>
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<td>CDCMD</td>
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<tr>
<td></td>
<td>CDPRE4</td>
<td>EXTERNAL SCHEMA/CONCEPTUAL SCHEMA TRANSFORMATION</td>
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<th>Module Name</th>
<th>Purpose</th>
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<td>ODFINN</td>
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</tr>
<tr>
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<td>CD1RIT</td>
<td>PERFORMS SQL SEARCH OF RC TABLE TO EXTRACT IND EC NO</td>
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<tr>
<td></td>
<td>CD2RIT</td>
<td>SETS UP TYPE 2 REFERENTIAL INTEGRITY CHECK</td>
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<td>CDCMD</td>
<td>USING TAG NO FOR AUC DETERMINS CS DATA TYPE/SIZE/DEC DIG</td>
</tr>
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<td>CDEMMD</td>
<td>RETRIEVE EXTERNAL METADATA AND DATA ITEM NUMBER</td>
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<td>CDEMDA</td>
<td>EXPAND ES ACTION LIST TO HOLD ALL DI NAMES FOR A USER VIEW</td>
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<tr>
<td></td>
<td>CDINEC</td>
<td>RETRIEVE IND ENT FOR DEP ENT AND PERFORM TYPE1 REF INTEG TEST</td>
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<tr>
<td></td>
<td>CDKYUQ</td>
<td>SET UP KEY UNIQUENESS TEST FOR AN ENTITY</td>
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<td>CDMPIK</td>
<td>CHECK FOR MODIFICATION OF PARTIAL INHERITED KEY</td>
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<td>CDPDI</td>
<td>VERIFY THE EXISTENCE A MAPPED DATA ITEM</td>
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<td>EXTERNAL SCHEMA/CONCEPTUAL SCHEMA TRANSFORMATION</td>
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<td></td>
<td>CDPTEC</td>
<td>DETERMINE WHETHER VIEW MAPS TO PART OF AN ENTITY CLASS</td>
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<td></td>
<td>CDRCNR</td>
<td>OBTAIN RELATION CLASS NUMBER FOR NOT IN SET OPERATION</td>
</tr>
<tr>
<td></td>
<td>CDRCTG</td>
<td>GET THE RC AND OWNER TAG OF AN INHERITED ATTRIBUTE</td>
</tr>
<tr>
<td></td>
<td>CDTGVW</td>
<td>RETRIEVE ALL TAGS TO WHICH A VIEW MAPS</td>
</tr>
<tr>
<td></td>
<td>CDVIEW</td>
<td>VERIFY THE EXISTENCE OF A VIEW IN THE CDM</td>
</tr>
<tr>
<td></td>
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TRANSFORM ES TO CS Where-external-routine-used List

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<th>Module Name</th>
<th>Purpose</th>
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<td>OEXEC</td>
<td>CD1RIT</td>
<td>PERFORMS SQL SEARCH OF RC TABLE TO EXTRACT IND EC NO</td>
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<tr>
<td></td>
<td>CD2RIT</td>
<td>SETS UP TYPE 2 REFERENTIAL INTEGRITY CHECK</td>
</tr>
<tr>
<td></td>
<td>CDCMD</td>
<td>USING TAG NO FOR AUC DETERMINS CS DATA TYPE/SIZE/DEC DIG</td>
</tr>
<tr>
<td></td>
<td>CDEMD</td>
<td>RETRIEVE EXTERNAL METADATA AND DATA ITEM NUMBER</td>
</tr>
<tr>
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<td>CDEMDA</td>
<td>EXPAND ES ACTION LIST TO HOLD ALL DI NAMES FOR A USER VIEW</td>
</tr>
<tr>
<td></td>
<td>CDINEC</td>
<td>RETRIEVE IND ENT FOR DEP ENT AND PERFORM TYPE1 REF INTEG TEST</td>
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<tr>
<td></td>
<td>CDKYUQ</td>
<td>SET UP KEY UNIQUENESS TEST FOR AN ENTITY</td>
</tr>
<tr>
<td></td>
<td>CDMPIK</td>
<td>CHECK FOR MODIFICATION OF PARTIAL INHERITED KEY</td>
</tr>
<tr>
<td></td>
<td>CDPDI</td>
<td>VERIFY THE EXISTENCE A MAPPED DATA ITEM</td>
</tr>
<tr>
<td></td>
<td>CDPRE4</td>
<td>EXTERNAL SCHEMA/CONCEPTUAL SCHEMA TRANSFORMATION</td>
</tr>
<tr>
<td></td>
<td>CDPTEC</td>
<td>DETERMINE WHETHER VIEW MAPS TO PART OF AN ENTITY CLASS</td>
</tr>
<tr>
<td></td>
<td>CDRGNR</td>
<td>OBTAIN RELATION CLASS NUMBER FOR NOT IN SET OPERATION</td>
</tr>
<tr>
<td></td>
<td>CDRCTG</td>
<td>GET THE RC AND OWNER TAG OF AN INHERITED ATTRIBUTE</td>
</tr>
<tr>
<td></td>
<td>CDTGVW</td>
<td>RETRIEVE ALL TAGS TO WHICH A VIEW MAPS</td>
</tr>
<tr>
<td></td>
<td>CDVIEW</td>
<td>VERIFY THE EXISTENCE OF A VIEW IN THE CDM</td>
</tr>
<tr>
<td></td>
<td>CDVTGK</td>
<td>VERIFY THAT A TEMP-AUC IS NOT A KEY CLASS MEMBER</td>
</tr>
</tbody>
</table>

| OFETCH        | CD1RIT      | PERFORMS SQL SEARCH OF RC TABLE TO EXTRACT IND EC NO |
|               | CD2RIT      | SETS UP TYPE 2 REFERENTIAL INTEGRITY CHECK |
|               | CDCMD       | USING TAG NO FOR AUC DETERMINS CS DATA TYPE/SIZE/DEC DIG |

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**TRANSFORM ES TO CS Where-external-routine-used List**

<table>
<thead>
<tr>
<th>System Module</th>
<th>Module Name</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>CDEMD</td>
<td>Retrieve external metadata and data item number</td>
<td></td>
</tr>
<tr>
<td>CDEMDA</td>
<td>Expand ES action list to hold all DI names for a user view</td>
<td></td>
</tr>
<tr>
<td>CDINEC</td>
<td>Retrieve ind ent for dep ent and perform type1 ref integ test</td>
<td></td>
</tr>
<tr>
<td>CDKYUQ</td>
<td>Set up key uniqueness test for an entity</td>
<td></td>
</tr>
<tr>
<td>CDMPIK</td>
<td>Check for modification of partial inherited key</td>
<td></td>
</tr>
<tr>
<td>CDPDI</td>
<td>Verify the existence a mapped data item</td>
<td></td>
</tr>
<tr>
<td>CDPRE4</td>
<td>External schema/conceptual schema transformation</td>
<td></td>
</tr>
<tr>
<td>CDPTEC</td>
<td>Determine whether view maps to part of an entity class</td>
<td></td>
</tr>
<tr>
<td>CDRCNR</td>
<td>Obtain relation class number for not in set operation</td>
<td></td>
</tr>
<tr>
<td>CDRCTG</td>
<td>Get the RC and owner tag of an inherited attribute</td>
<td></td>
</tr>
<tr>
<td>CDTGVW</td>
<td>Retrieve all tags to which a view maps</td>
<td></td>
</tr>
<tr>
<td>CDVIEW</td>
<td>Verify the existence of a view in the CDM</td>
<td></td>
</tr>
<tr>
<td>CDVTGK</td>
<td>Verify that a temp-auc is not a key class member</td>
<td></td>
</tr>
</tbody>
</table>

**OPEN**

<table>
<thead>
<tr>
<th>System Module</th>
<th>Module Name</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>CDCMD</td>
<td>Using tag no for auc determines CS data type/size/dec dig</td>
<td></td>
</tr>
<tr>
<td>CDPRE4</td>
<td>External schema/conceptual schema transformation</td>
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**OSQL3**

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<th>Module Name</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>CD1RIT</td>
<td>Performs SQL search of rc table to extract ind ec no</td>
<td></td>
</tr>
<tr>
<td>CD2RIT</td>
<td>Sets up type 2 referential integrity check</td>
<td></td>
</tr>
<tr>
<td>CDCMD</td>
<td>Using tag no for auc determines CS data type/size/dec dig</td>
<td></td>
</tr>
</tbody>
</table>
TRANSFORM ES TO CS Where-external-routine-used List

<table>
<thead>
<tr>
<th>System Module</th>
<th>Module Name</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>CDEMD</td>
<td>RETRIEVE EXTERNAL METADATA AND DATA ITEM NUMBER</td>
<td></td>
</tr>
<tr>
<td>CDEMDSA</td>
<td>EXPAND ES ACTION LIST TO HOLD ALL DI NAMES FOR A USER VIEW</td>
<td></td>
</tr>
<tr>
<td>CDINEC</td>
<td>RETRIEVE IND ENT FOR DEP ENT AND PERFORM TYPE1 REF INTEG TEST</td>
<td></td>
</tr>
<tr>
<td>CDKUYQ</td>
<td>SET UP KEY UNIQUENESS TEST FOR AN ENTITY</td>
<td></td>
</tr>
<tr>
<td>CDMPIK</td>
<td>CHECK FOR MODIFICATION OF PARTIAL INHERITED KEY</td>
<td></td>
</tr>
<tr>
<td>CDPDI</td>
<td>VERIFY THE EXISTENCE A MAPPED DATA ITEM</td>
<td></td>
</tr>
<tr>
<td>CDPRE4</td>
<td>EXTERNAL SCHEMA/CONCEPTUAL SCHEMA TRANSFORMATION</td>
<td></td>
</tr>
<tr>
<td>CDPTEC</td>
<td>DETERMINE WHETHER VIEW MAPS TO PART OF AN ENTITY CLASS</td>
<td></td>
</tr>
<tr>
<td>CDRCNR</td>
<td>OBTAIN RELATION CLASS NUMBER FOR NOT IN SET OPERATION</td>
<td></td>
</tr>
<tr>
<td>CDRCTG</td>
<td>GET THE RC AND OWNER TAG OF AN INHERITED ATTRIBUTE</td>
<td></td>
</tr>
<tr>
<td>CDTGVW</td>
<td>RETRIEVE ALL TAGS TO WHICH A VIEW MAPS</td>
<td></td>
</tr>
<tr>
<td>CDVIEW</td>
<td>VERIFY THE EXISTENCE OF A VIEW IN THE CDM</td>
<td></td>
</tr>
<tr>
<td>CDVTGK</td>
<td>VERIFY THAT A TEMP-AUC IS NOT A KEY CLASS MEMBER</td>
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RPTERR

<table>
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<tr>
<th>System Module</th>
<th>Module Name</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>CDCMD</td>
<td>USING TAG NO FOR AUC DETERMINS CS DATA TYPE/SIZE/DEC DIG</td>
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</tr>
<tr>
<td>CDEMD</td>
<td>RETRIEVE EXTERNAL METADATA AND DATA ITEM NUMBER</td>
<td></td>
</tr>
<tr>
<td>CDMPIK</td>
<td>CHECK FOR MODIFICATION OF PARTIAL INHERITED KEY</td>
<td></td>
</tr>
<tr>
<td>CDNNEC</td>
<td>DETERMINE IF THE VIEW OR DATA ITEMS MAP TO MULTIPLE ENTITY CLASSES</td>
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</tr>
<tr>
<td>CDPRE4</td>
<td>EXTERNAL SCHEMA/CONCEPTUAL SCHEMA TRANSFORMATION</td>
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<tr>
<td>CDPTEC</td>
<td>DETERMINE WHETHER VIEW MAPS TO PART OF AN ENTITY CLASS</td>
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<tr>
<td>CDVIEW</td>
<td>VERIFY THE EXISTENCE OF A VIEW IN THE CDM</td>
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**TRANSFORM ES TO CS Where-external-routine-used List**

<table>
<thead>
<tr>
<th>System Module</th>
<th>Module Name</th>
<th>Module Purpose</th>
</tr>
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<tbody>
<tr>
<td>CDVTGK</td>
<td>VERIFY THAT A TEMP-AUC IS NOT A KEY CLASS MEMBER</td>
<td></td>
</tr>
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</table>
3.10.7 Main Program Parts List

The following lists each Main Program listed in 3.10.1 and all the modules which are called either by that module itself or by any of the documented modules which it calls. It is possible for a non-main module to be listed more that once if it is called by multiple modules. The called modules, in this case known as program parts, are marked as to whether they are documented here. If so, the phrase "well-defined module" appears by the module name, if not it is an "external "routine". The Purpose of the Main Program module is listed as well.
# TRANSFORM ES TO CS Main Program Parts List

<table>
<thead>
<tr>
<th>Main Pgm Name</th>
<th>Module Name</th>
<th>Module Type</th>
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<tr>
<td>CDPRE4</td>
<td>Purpose---EXTERNAL SCHEMA/CONCEPTUAL SCHEMA TRANSFORMATION</td>
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<td>CDIRIT</td>
<td>Well-defined module</td>
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<td>CDIRIT</td>
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<td>CDACAQ</td>
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<td>CDATXL</td>
<td>Well-defined module</td>
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<td>GDTGVW</td>
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<td>CDTUXL</td>
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<td>External routine</td>
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</table>

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3.10.8 Module Documentation

The following documentation describes information which is specific to each individual module being documented in this specification as listed in section 3.10.2. It provides a compact way of getting information that would be otherwise buried within each module's source code.

The specific items in this module documentation have the following meanings:

NAME: Name of program Module.

PURPOSE: Purpose of Module as detailed in the source code.

LANGUAGE: Programming language source code is written in.
The choices are: VAX-11 FORTRAN C (I/S-1 Workbench 'C') VAX-11 COBOL

MODULE TYPE: Whether a Program, Subroutine, or Function.

SOURCE FILE: Name of Source File from file specification.

SOURCE FILE TYPE: Source File Extension from file specification.

HOST: Whether this is a host-dependent routine (VAX or IBM) or blank if host-independent.

SUBSYSTEM: IISS sub-system this file resides in.

SUBDIRECTORY: Sub-directory of that subsystem in which this file resides.

DOCUMENTATION GROUP: Name of documentation group of which this source file is a member.

DESCRIPTION: A description of the module as
ARGUMENTS: The arguments with which this routine is called if it is a Subroutine or a Function.

INCLUDE FILES: A list of all the files that are included into this module as well as their purposes.

ROUTINES CALLED: Subroutines or Functions, either documented or external, called by this module, if any.

CALLED DIRECTLY BY: The documented routines which call this module, if any.

USED IN MAIN PROGRAM(S): The documented Main Programs which contain this module in their parts list according to the list in section 3.10.7.

The Module Documentation is arranged alphabetically according to Module Name.
TRANSFORM ES TO CS Module Documentation

NAME: CD1RIT
PURPOSE: PERFORMS SQL SEARCH OF RC TABLE TO EXTRACT IND EC_NO
LANGUAGE: VAX-11 COBOL
MODULE TYPE: SUBROUTINE
SOURCE FILE: CD1RIT
SOURCE FILE TYPE: .COB
HOST: SUBSYSTEM: CDM
SUBDIRECTORY: DOCUMENTATION GROUP: PS41231

DESCRIPTION:
PERFORM SQL SEARCH OF RELATION-CLASS TABLE TO EXTRACT THE INDEPENDENT EC NO WHICH CORRESPONDS TO EACH TEMP-RC-NO. CALL CDACAQ TO FILL ROWS OF CS-ACTION-LIST AND CS-QUALIFY-LIST.

ARGUMENTS:
LDA = RECRD
CURSOR = RECRD
MODEL-NO = DSPLY [S9(4)]
TEMP-XFORM-LIST = RECRD
ES-ACTION-LIST = RECRD
ES-QUALIFY-LIST = RECRD
UV-ABBR-LIST = RECRD
CODE-GENERATOR-TABLE = RECRD
IOS-IND = DSPLY [9]
PARCH1 = DSPLY [X(30)]
PARCH2 = DSPLY [X(30)]
PARCH3 = DSPLY [X(30)]
PARCH4 = DSPLY [X(30)]
MY-HOST = DSPLY [XXX]
TARGET-HOST = DSPLY [XXX]
SOURCE-LANGUAGE = DSPLY [X(10)]
CE-WORK-LIST = RECRD
ERROR-FILE = DSPLY [X(30)]
NDML-COUNTER = DSPLY [999]
CS-ACTION-LIST = RECRD
CS-QUALIFY-LIST = RECRD
USER-ERROR-COUNT = DSPLY [9(5)]
ERROR-STATUS = DSPLY [9]
RET-STATUS = DSPLY [X(5)]

INCLUDE FILES:

ERRCDM - IISS ERROR STATUS CODES FOR CDMP MODULES
CHKCDM - IISS CDMP CHECK STATUS CODES
TXLIST - TEMP TRANSFORM LIST
ESAL - EXTERNAL SCHEMA ACTION LIST
ESQUAL - EXTERNAL SCHEMA QUALIFY LIST
UVABBR - USER VIEW ABBREVIATION LIST
CGTABLE - CODE GENERATING TABLE - TRACKS ALL GENERATED SOFTWARE
CEWORK - CS TO ES WORK LIST INFORMATION
CSAL - CONCEPTUAL SCHEMA ACTION LIST
CSQUAL - CONCEPTUAL SCHEMA QUALIFY LIST
ERRPRO - PROCESS ERROR INCLUDE FILE

ROUTINES CALLED:

OSQL3
ODFINN
OBINDN
OEXEC
OFETCH
CDACAQ - ADD ROW TO CS ACTION LIST AND CS QUALIFY LIST AND TYPE 1 RIT
ERRPRO

CALLED DIRECTLY BY:

CDPRE4 - EXTERNAL SCHEMA/CONCEPTUAL SCHEMA TRANSFORMATION

USED IN MAIN PROGRAM(S):

CDPRE4 - EXTERNAL SCHEMA/CONCEPTUAL SCHEMA TRANSFORMATION
TRANSFORM ES TO CS Module Documentation

NAME: CD2RIT
PURPOSE: SETS UP TYPE 2 REFERENTIAL INTEGRITY CHECK

LANGUAGE: VAX-11 COBOL
MODULE TYPE: SUBROUTINE
SOURCE FILE: CD2RIT
SOURCE FILE TYPE: .COB
HOST: SUBSYSTEM: CDM
SUBDIRECTORY: DOCUMENTATION GROUP: PS41231

DESCRIPTION:

FILL IN CS ACTION LIST AND CS-QUALIFY LIST FOR TYPE 2 RI TEST. ON EXIT, RESET CSQ-USED TO ITS VALUE ON INPUT.

ARGUMENTS:

LDA = RECRD
CURSOR = RECRD
MODEL-NO = DSPLY [S9(4)]
IND-EC-NO = DSPLY [S9(4)]
ES-ACTION-LIST = RECRD
ES-QUALIFY-LIST = RECRD
UV-ABBR-LIST = RECRD
CODE-GENERATOR-TABLE = RECRD
IOS-IND = DSPLY [9]
PARCL1 = DSPLY [X(30)]
PARCL2 = DSPLY [X(30)]
PARCL3 = DSPLY [X(30)]
PARCL4 = DSPLY [X(30)]
MY-HOST = DSPLY [XXX]
TARGET-HOST = DSPLY [XXX]
SOURCE-LANGUAGE = DSPLY [X(10)]
CE-WORK-LIST = RECRD
ERROR-FILE = DSPLY [X(30)]
MDML-COUNTER = DSPLY [999]
CS-ACTION-LIST = RECRD
CS-QUALIFY-LIST = RECRD
USER-ERROR-COUNT = DSPLY [g(5)]
ERROR-STATUS = DSPLY [g]
RET-STATUS = DSPLY [X(5)]

INCLUDE FILES:
-----------------
ERRCDM    - IISS ERROR STATUS CODES FOR CDMP MODULES
CHKCDM    - IISS CDMP CHECK STATUS CODES
ESAL      - EXTERNAL SCHEMA ACTION LIST
ESQUAL    - EXTERNAL SCHEMA QUALIFY LIST
UVABBR    - USER VIEW ABBREVIATION LIST
CGTABLE   - CODE GENERATING TABLE- TRACKS ALL GENERATED SOFTWARE
CEWORK    - CS TO ES WORK LIST INFORMATION
CSAL      - CONCEPTUAL SCHEMA ACTION LIST
CSQUAL    - CONCEPTUAL SCHEMA QUALIFY LIST
ERRPRO    - PROCESS ERROR INCLUDE FILE

ROUTINES CALLED:
-----------------
OSQL3
ODFINN
OBINDN
OEXEC
OFETCH
CDPRE6
CDCMD    - USING TAG NO FOR AUC DETERMINES CS DATA TYPE/SIZE/DEC DIG
ERRPRO

CALLED DIRECTLY BY:
-----------------
CDPRE4    - EXTERNAL SCHEMA/CONCEPTUAL SCHEMA TRANSFORMATION

USED IN MAIN PROGRAM(S):
-----------------
CDPRE4    - EXTERNAL SCHEMA/CONCEPTUAL SCHEMA TRANSFORMATION
NAME: CDABVW
PURPOSE: CDABVW-GET THE VIEW NUMBER GIVEN THE USER ENTERED ABBREVIAT
LANGUAGE: VAX-11 COBOL
MODULE TYPE: SUBROUTINE
SOURCE FILE: CDABVW
SOURCE FILE TYPE: .COB
HOST: SUBSYSTEM: CDH
SUBDIRECTORY: DOCUMENTATION GROUP: PS41231

DESCRIPTION:
-------------
SCAN THE UV-ABBR-LIST SEARCHING FOR A UVABBR MATCHING THE INPUT ARGUMENT, ABBREV. IF FOUND, RETURN THE CORRESPONDING VIEW NUMBER, OTHERWISE ZERO.

ARGUMENTS:
-----------
ABBREV = DSPLY [XX]  
UV-ABBR-LIST = RECRD  
VIEW-NO = DSPLY [S9(4)]  
UV-PTR = DSPLY [99]

INCLUDE FILES:
-----------------
UVABBR - USER VIEW ABBREVIATION LIST

CALLED DIRECTLY BY:
---------------------
CDPRE4 - EXTERNAL SCHEMA/CONCEPTUAL SCHEMA TRANSFORMATION

USED IN MAIN PROGRAM(S):
------------------------
CDPRE4 - EXTERNAL SCHEMA/CONCEPTUAL SCHEMA

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TRANSFORMATION
NAME: CDACAL
PURPOSE: ADD ROWS TO THE CS-ACTION-LIST
LANGUAGE: VAX-11 COBOL
MODULE TYPE: SUBROUTINE
SOURCE FILE: CDACAL
SOURCE FILE TYPE: .COB
HOST:
SUBSYSTEM: CDM
SUBDIRECTORY: DOCUMENTATION
DOCUMENTATION GROUP: PS41231

DESCRIPTION:

FILL THE CS ACTION LIST FROM THE TEMP TRANSFORM LIST

ARGUMENTS:

TEMP-XFORM-LIST = RECRD
CS-ACTION-LIST = RECRD
ES-ACTION-LIST = RECRD
RET-STATUS = DSPLY [X(5)]

INCLUDE FILES:

ERRCDM - IISS ERROR STATUS CODES FOR CDMP MODULES
CHKCDM - IISS CDMP CHECK STATUS CODES
TXLIST - TEMP TRANSFORM LIST
CSAL - CONCEPTUAL SCHEMA ACTION LIST
ESAL - EXTERNAL SCHEMA ACTION LIST
ERRPRO - PROCESS ERROR INCLUDE FILE

ROUTINES CALLED:

ERRPRO

CALLED DIRECTLY BY:

3-41
CDPRE4 - EXTERNAL SCHEMA/CONCEPTUAL SCHEMA TRANSFORMATION

USED IN MAIN PROGRAM(S):

CDPRE4 - EXTERNAL SCHEMA/CONCEPTUAL SCHEMA TRANSFORMATION
TRANSFORM ES TO CS Module Documentation

NAME: CDACAQ
PURPOSE: ADD ROW TO CS ACTION LIST AND CS QUALIFY LIST AND TYPE 1 RI
LANGUAGE: VAX-11 COBOL
MODULE TYPE: SUBROUTINE
SOURCE FILE: CDACAQ
SOURCE FILE TYPE: .COB
HOST:
SUBSYSTEM:
SUBDIRECTORY:
DOCUMENTATION GROUP: PS41231

DESCRIPTION:
---------------------------
FOR THE FIRST TEMP-RC-NO ENTRY WHICH MATCHES THE INPUT ARGUMENT, FILL IN A CS-ACTION ENTRY AND A CS QUALIFY ENTRY. FOR EACH ADDITIONAL MATCH, FILL IN A CS QUALIFY ENTRY. ELIMINATE CSQ DUPLICATES AND CALL CDPRE6 TO GENERATE A TYPE 1 REFERENTIAL INTEGRITY TEST.

ARGUMENTS:
-------------
TEMP-XFORM-LIST = RECRD
IND-EC-NO = DSPLY [S9(4)]
RC-NO = DSPLY [S9(4)]
ES-ACTION-LIST =
ES-QUALIFY-LIST =
UV-ABBR-LIST =
CODE-GENERATOR-TABLE =
IOS-IND =
PARCL1 =
PARCL2 =
PARCL3 =
PARCL4 =
MY-HOST =
TARGET-HOST =
SOURCE-LANGUAGE =
CE-WORK-LIST =
ERROR-FILE =
INCLUDE FILES:

---------------
ERRCDM - IISS ERROR STATUS CODES FOR CDMP MODULES
CHKCDM - IISS CDMP CHECK STATUS CODES
TXLIST - TEMP TRANSFORM LIST
ESAL - EXTERNAL SCHEMA ACTION LIST
ESQUAL - EXTERNAL SCHEMA QUALIFY LIST
UVABBR - USER VIEW ABBREVIATION LIST
CGTABLE - CODE GENERATING TABLE - TRACKS ALL GENERATED SOFTWARE
CEWORK - CS TO ES WORK LIST INFORMATION
ORCLEDA - WS DEFINITION FOR THE ORACLE LOGIN AREA
CSAL - CONCEPTUAL SCHEMA ACTION LIST
CSQUAL - CONCEPTUAL SCHEMA QUALIFY LIST
ERRPRO - PROCESS ERROR INCLUDE FILE

ROUTINES CALLED:
---------------
CDPRE6
CDCMD - USING TAG NO FOR AUC DETERMINS CS DATA TYPE/SIZE/DEC DIG
ERRPRO

CALLED DIRECTLY BY:
---------------
CD1RIT - PERFORMS SQL SEARCH OF RC TABLE TO EXTRACT IND EC NO
CDINEC - RETRIEVE IND ENT FOR DEP ENT AND PERFORM TYPE1 REF INTEG TEST

USED IN MAIN PROGRAM(S):
---------------
CDPRE4 - EXTERNAL SCHEMA/CONCEPTUAL SCHEMA TRANSFORMATION

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TRANSFORM ES TO CS Module Documentation

NAME: CDATXL
PURPOSE: ADD ROW TO TEMP-XFORM-LIST
LANGUAGE: VAX-11 COBOL
MODULE TYPE: SUBROUTINE
SOURCE FILE: CDATXL
SOURCE FILE TYPE: .COB
HOST:
SUBSYSTEM: CDM
SUBDIRECTORY: DOCUMENTATION
DOCUMENTATION GROUP: PS41231

DESCRIPTION:

FILL IN NEXT TEMP-XFORM LIST ENTRY WITH CORRESPONDING INPUT PARAMETERS. ADJUST ROW-USED INDICATOR TO POINT TO LAST USED ROW GUARDING AGAINST TABLE OVERFLOW.

ARGUMENTS:

EC-NO = DSPLY [S9(4)]
TAG-NO = DSPLY [S9(4)]
CS-TYPE = DSPLY [X]
CS-SIZE = DSPLY [999]
CS-MD = DSPLY [99]
ES-INDEX = DSPLY [99]
NDML-COUNTER = DSPLY [999]
TEMP-XFORM-LIST = RECRD
RET-STATUS = DSPLY [X(5)]

INCLUDE FILES:

ERRCDM - IISS ERROR STATUS CODES FOR CDMP MODULES
CHKCDM - IISS CDMP CHECK STATUS CODES
TXLIST - TEMP TRANSFORM LIST
ERRPRO - PROCESS ERROR INCLUDE FILE

ROUTINES CALLED:

3-45
ERRPRO

CALLED DIRECTLY BY:

CDPRE4 - EXTERNAL SCHEMA/CONCEPTUAL SCHEMA TRANSFORMATION
CDTGJVW - RETRIEVE ALL TAGS TO WHICH A VIEW MAPS

USED IN MAIN PROGRAM(S):

CDPRE4 - EXTERNAL SCHEMA/CONCEPTUAL SCHEMA TRANSFORMATION
TRANSFORM ES TO CS Module Documentation

NAME: CDCMD

PURPOSE: USING TAG NO FOR AUC DETERMINS CS DATA TYPE/SIZE/DEC DIG

LANGUAGE: VAX-11 COBOL

MODULE TYPE: SUBROUTINE

SOURCE FILE: CDCMD

SOURCE FILE TYPE: .COB

HOST: CDM

SUBSYSTEM: CDM

SUBDIRECTORY: DOCUMENTATION GROUP: PS41231

DESCRIPTION:
---------------
- THIS ROUTINE WILL USE A TAG NUMBER OF AN ATTRIBUTE USE CLASS AND ACCESS THE CDM FOR ITS CONCEPTUAL TYPE, SIZE AND NUMBER OF DECIMAL DIGITS.

ARGUMENTS:
-----------

ORACLE-LDA = RECRD
MODEL-NO = DSPLY [S9(4)]
TAG = DSPLY [S9(4)]
ERROR-FILE = DSPLY [X(30)]
EC-NO = DSPLY [S9(4)]
CS-TYPE = DSPLY [X]
CSSIZE = DSPLY [999]
ND = DSPLY [99]
USER-ERROR-COUNT = DSPLY [9(5)]
ERROR-STATUS = DSPLY [9]
RET-STATUS = DSPLY [X(5)]

INCLUDE FILES:
---------------

ERRCDM - IISS ERROR STATUS CODES FOR CDMP MODULES
CHKCMD - IISS CDMP CHECK STATUS CODES
ORCLEDA - WS DEFINITION FOR THE ORACLE LOGIN AREA
ERRPRO - PROCESS ERROR INCLUDE FILE

3-47
ROUTINES CALLED:
-----------------
OCLOSE
OOPEN
OSQL3
ODFINN
OBINDN
OEXEC
OFETCH
RPTERR
ERRPRO

CALLED DIRECTLY BY:
---------------------
CD2RIT - SETS UP TYPE 2 REFERENTIAL INTEGRITY CHECK
CDACAQ - ADD ROW TO CS ACTION LIST AND CS QUALIFY LIST
         AND TYPE 1 RIT
CDKYUQ - SET UP KEY UNIQUENESS TEST FOR AN ENTITY
CDPRE4 - EXTERNAL SCHEMA/CONCEPTUAL SCHEMA
         TRANSFORMATION
CDTGVW - RETRIEVE ALL TAGS TO WHICH A VIEW MAPS

USED IN MAIN PROGRAM(S):
------------------------
CDPRE4 - EXTERNAL SCHEMA/CONCEPTUAL SCHEMA
         TRANSFORMATION
TRANSFORM ES TO CS Module Documentation

NAME: CDEMD
PURPOSE: RETRIEVE EXTERNAL METADATA AND DATA ITEM NUMBER
LANGUAGE: VAX-11 COBOL
MODULE TYPE: SUBROUTINE
SOURCE FILE: CDEMD
SOURCE FILE TYPE: .COB
HOST: SUBSYSTEM: CDM
SUBDIRECTORY: DOCUMENTATION GROUP: PS41231

DESCRIPTION:

PERFORM SQL SELECT TO RETURN EXTERNAL METADATA (TYPE, SIZE, NUMBER OF DECIMALS), AND THE DATA ITEM NUMBER GIVEN THE VIEW NUMBER AND THE DATA ITEM NAME.

ARGUMENTS:

LDA = RECRD
CURSOR = RECRD
VIEW-NO = DSPLY [S9(4)]
DI-NAME = DSPLY [X(30)]
ERROR-FILE = DSPLY [X(30)]
DI-NO = DSPLY [S9(4)]
ES-TYPE = DSPLY [X]
ES-SIZE = DSPLY [999]
ES-ND = DSPLY [99]
USER-ERROR-COUNT = DSPLY [9(5)]
RET-STATUS = DSPLY [X(5)]

INCLUDE FILES:

ERRCDM - IISS ERROR STATUS CODES FOR CDMP MODULES
CHKCDM - IISS CDMP CHECK STATUS CODES
ERRPRO - PROCESS ERROR INCLUDE FILE
ROUTINES CALLED:
-------------------------------------
OSQL3
ODFINN
OBINDN
OEXEC
OFETCH
RPTERR
ERRPRO

CALLED DIRECTLY BY:
-------------------------------------
CDPRE4 - EXTERNAL SCHEMA/CONCEPTUAL SCHEMA TRANSFORMATION

USED IN MAIN PROGRAM(S):
-------------------------------------
CDPRE4 - EXTERNAL SCHEMA/CONCEPTUAL SCHEMA TRANSFORMATION
NAME: CDEMDA
PURPOSE: EXPAND ES ACTION LIST TO HOLD ALL DI NAMES FOR A USER VIEW
LANGUAGE: VAX-11 COBOL
MODULE TYPE: SUBROUTINE
SOURCE FILE: CDEMDA
SOURCE FILE TYPE: .COB
HOST:
SUBSYSTEM: CDM
SUBDIRECTORY:
DOCUMENTATION GROUP: PS41231

DESCRIPTION:

EXTRACT DI NAMES FOR ALL DATA ITEMS IN A USER VIEW. FOR EACH DI NAME EXTRACTED, MAKE AN ENTRY IN THE ES ACTION LIST. FOR THE FIRST DI NAME EXTRACTED, EXPAND THE LAST USED ROW OF THE ES ACTION LIST. FOR EACH ADDITIONAL DI NAME, FILL IN A NEW ROW.

ARGUMENTS:

---------
LDA = RECRD
CURSOR = RECRD
VIEW-NO = DSPLY [S9(4)]
ES-ACTION-LIST = RECRD
RET-STATUS = DSPLY [X(5)]

INCLUDE FILES:

---------
ERRCDM - IISS ERROR STATUS CODES FOR CDMP MODULES
CHKCDM - IISS CDMP CHECK STATUS CODES
ESAL - EXTERNAL SCHEMA ACTION LIST
ERRPRO - PROCESS ERROR INCLUDE FILE

ROUTINES CALLED:

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CALLEO DIRECTLY BY:
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CDPREF4 - EXTERNAL SCHEMA/CONCEPTUAL SCHEMA TRANSFORMATION

USED IN MAIN PROGRAM(S):
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CDPREF4 - EXTERNAL SCHEMA/CONCEPTUAL SCHEMA TRANSFORMATION
TRANSFORM ES TO CS Module Documentation

NAME: CDINEC
PURPOSE: RETRIEVE IND ENT FOR DEP ENT AND PERFORM TYPE1 REF INTEGRITY
LANGUAGE: VAX-11 COBOL
MODULE TYPE: SUBROUTINE
SOURCE FILE: CDINEC
SOURCE FILE TYPE: .COB
HOST:
SUBSYSTEM: CDM
SUBDIRECTORY:
DOCUMENTATION GROUP: PS41231

DESCRIPTION:

PERFORM SQL SEARCH OF RELATION CLASS TABLE TO FIND ANY INDEPENDENT ENTITY CLASSES. FOR EACH FOUND, CALL CDACAQ TO SET UP TYPE 1 REFERENTIAL INTEGRITY TEST. FIND THE INDEPENDENT ENTITIES ON WHICH AN ENTITY DEPENDS. IF THERE ARE ANY, SET UP TYPE 1 REFERENTIAL INTEGRITY TEST.

ARGUMENTS:

LDA = RECRD
CURSOR = RECRD
MODEL-NO = DSPLY [S9(4)]
TEMP-XFORM-LIST = RECRD
ES-ACTION-LIST = RECRD
ES-QUALIFY-LIST = RECRD
UV-ABBR-LIST = RECRD
CODE-GENERATOR-TABLE = RECRD
IOS-IND = DSPLY [9]
PARCL1 = DSPLY [X(30)]
PARCL2 = DSPLY [X(30)]
PARCL3 = DSPLY [X(30)]
PARCL4 = DSPLY [X(30)]
MY-HOST = DSPLY [XXX]
TARGET-HOST = DSPLY [XXX]
SOURCE-LANGUAGE = DSPLY [X(10)]
CE-WORK-LIST = RECRD
ERROR-FILE = DSPLY [X(30)]
NDML-COUNTER = DSPLY [999]
CS-ACTION-LIST = RECRD
CS-QUALIFY-LIST = RECRD
USER-ERROR-COUNT = DSPLY [9(5)]
ERROR-STATUS = DSPLY [9]
RET-STATUS = DSPLY [X(5)]

INCLUDE FILES:

ERRCDM - IISS ERROR STATUS CODES FOR CDMP MODULES
CHKCDM - IISS CDMP CHECK STATUS CODES
TXLIST - TEMP TRANSFORM LIST
ESAL - EXTERNAL SCHEMA ACTION LIST
ESQUAL - EXTERNAL SCHEMA QUALIFY LIST
UVABBR - USER VIEW ABBREVIATION LIST
CGTABLE - CODE GENERATING TABLE- TRACKS ALL GENERATED SOFTWARE
CEWORK - CS TO ES WORK LIST INFORMATION
CSAL - CONCEPTUAL SCHEMA ACTION LIST
CSQUAL - CONCEPTUAL SCHEMA QUALIFY LIST
ERRPRO - PROCESS ERROR INCLUDE FILE

ROUTINES CALLED:

OSQL3
ODFINN
OBINDN
OEXEC
OFETCH
CDACAQ - ADD ROW TO CS ACTION LIST AND CS QUALIFY LIST
AND TYPE 1 RIT
ERRPRO

CALLED DIRECTLY BY:

CDPRE4 - EXTERNAL SCHEMA/CONCEPTUAL SCHEMA
TRANSFORMATION

USED IN MAIN PROGRAM(S):

CDPRE4 - EXTERNAL SCHEMA/CONCEPTUAL SCHEMA
TRANSFORMATION
TRANSFORM ES TO CS Module Documentation

NAME: CDKYUQ
PURPOSE: SET UP KEY UNIQUENESS TEST FOR AN ENTITY
LANGUAGE: VAX-11 COBOL
MODULE TYPE: SUBROUTINE
SOURCE FILE: CDKYUQ
SOURCE FILE TYPE: .COB
HOST: SUBSYSTEM: CDM
SUBDIRECTORY: DOCUMENTATION GROUP: PS41231

DESCRIPTION:
--------------
FILL IN NEXT ROW OF CS-ACTION-LIST FOR EVERY UNIQUE KC-NO
RETURNED. FILL IN NEXT ROW OF CS-QUALIFY-LIST FOR EVERY ROW
RETURNED. ELIMINATE ALL DUPLICATE CS-QUALIFY ENTRIES. FOR
EACH UNIQUE KC-NO, GENERATE KEY UNIQUENESS TEST.

ARGUMENTS:
-----------
LDA = RECRD
CURSOR = RECRD
MODEL-NO = DSPLY [S9(4)]
TEMP-XFORM-LIST = RECRD
NDML-COUNTER = DSPLY [999]
CS-ACTION-LIST = RECRD
CS-QUALIFY-LIST = RECRD
ES-ACTION-LIST = RECRD
ES-QUALIFY-LIST = RECRD
UV-ABBR-LIST = RECRD
CODE-GENERATOR-TABLE = RECRD
IOS-IND = DSPLY [9]
PARCL1 = DSPLY [X(30)]
PARCL2 = DSPLY [X(30)]
PARCL3 = DSPLY [X(30)]
PARCL4 = DSPLY [X(30)]
MY-HOST = DSPLY [XXX]
TARGET-HOST = DSPLY [XXX]
SOURCE-LANGUAGE = DSPLY [X(10)]
CE-WORK-LIST = RECRD
ERROR-FILE = DSPLY [X(30)]
USER-ERROR-COUNT = DSPLY [9(5)]
ERROR-STATUS = DSPLY [9]
RET-STATUS = DSPLY [X(5)]

INCLUDE FILES:
------------------
ERRCDM - IISS ERROR STATUS CODES FOR CDMP MODULES
CHKCDM - IISS CDMP CHECK STATUS CODES
TXLIST - TEMP TRANSFORM LIST
CSAL - CONCEPTUAL SCHEMA ACTION LIST
CSQUAL - CONCEPTUAL SCHEMA QUALIFY LIST
ESAL - EXTERNAL SCHEMA ACTION LIST
ESQUAL - EXTERNAL SCHEMA QUALIFY LIST
UVABBR - USER VIEW ABBREVIATION LIST
CGTABLE - CODE GENERATING TABLE - TRACKS ALL GENERATED SOFTWARE
CEWORK - CS TO ES WORK LIST INFORMATION
ERRPRO - PROCESS ERROR INCLUDE FILE

ROUTINES CALLED:
------------------
OSQL3
ODFINN
OBINDN
OEXEC
OFETCH
CDPRE6
CDCMD - USING TAG NO FOR AUC DETERMINS CS DATA TYPE/SIZE/DEC DIG
ERRPRO

CALLED DIRECTLY BY:
------------------
CDPRE4 - EXTERNAL SCHEMA/CONCEPTUAL SCHEMA TRANSFORMATION

USED IN MAIN PROGRAM(S):
------------------
CDPRE4 - EXTERNAL SCHEMA/CONCEPTUAL SCHEMA TRANSFORMATION
TRANSFORM ES TO GS Module Documentation

NAME: CDMPIK
PURPOSE: CHECK FOR MODIFICATION OF PARTIAL INHERITED KEY

LANGUAGE: VAX-11 COBOL
MODULE TYPE: SUBROUTINE
SOURCE FILE: CDMPIK
SOURCE FILE TYPE: .COB
HOST:
SUBSYSTEM: CDM
SUBDIRECTORY: DOCUMENTATION
DOCUMENTATION GROUP: PS41231

DESCRIPTION:

FOR EACH UNIQUE RC-NO IN THE TEMP XFORM LIST, SELECT THE TAG-NO FROM INHERITED ATT USE WHERE THE RC NOS ARE EQUAL. FOR EACH TAG-NO SELECTED, SEARCH THE TEMP XFORM LIST FOR A MATCH. IF FOUND, OK; OTHERWISE GENERATE ERROR MESSAGE.

ARGUMENTS:

LDA = RECRD
CURSOR = RECRD
MODEL-NO = DSPLY [S9(4)]
TEMP-XFORM-LIST = RECRD
ERROR-FILE = DSPLY [X(30)]
USER-ERROR-COUNT = DSPLY [9(5)]
ERROR-STATUS = DSPLY [9]
RET-STATUS = DSPLY [X(5)]

INCLUDE FILES:

ERRCDM - IISS ERROR STATUS CODES FOR CDMP MODULES
CHKCDM - IISS CDMP CHECK STATUS CODES
TXLIST - TEMP TRANSFORM LIST
ERRPRO - PROCESS ERROR INCLUDE FILE

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ROUTINES CALLED:
------------------
OSQL3
ODFINN
OBINDN
OEEXEC
OPETCH
RPTERR
ERRPRO

CALLED DIRECTLY BY:
---------------------
CDPRE4 - EXTERNAL SCHEMA/CONCEPTUAL SCHEMA
TRANSFORMATION

USED IN MAIN PROGRAM(S):
-------------------------
CDPRE4 - EXTERNAL SCHEMA/CONCEPTUAL SCHEMA
TRANSFORMATION
TRANSFORM ES TO CS Module Documentation

NAME: CDNNEC

PURPOSE: DETERMINE IF THE VIEW OR DATA ITEMS MAP TO MULTIPLE ENTITY

LANGUAGE: VAX-11 COBOL

MODULE TYPE: SUBROUTINE

SOURCE FILE: CDNNEC

SOURCE FILE TYPE: .COB

HOST:

SUBSYSTEM: CDM

SUBDIRECTORY:

DOCUMENTATION GROUP: PS41231

DESCRIPTION:

SEARCH ALL USED TEMP-EC-NO ENTRIES IN TEMP-XFORM-LIST
VERIFYING THAT ALL EC-NOS ARE EQUAL.

ARGUMENTS:

TEMP-XFORM-LIST = RECRD
ES-ACTION-LIST = RECRD
UV-ABBR-LIST = RECRD
ERROR-FILE = DSPLY [X(30)]
USER-ERROR-COUNT = DSPLY [9(5)]
ERROR-STATUS = DSPLY [9]

INCLUDE FILES:

TXLIST - TEMP TRANSFORM LIST
ESAL - EXTERNAL SCHEMA ACTION LIST
UVABBR - USER VIEW ABBREVIATION LIST

ROUTINES CALLED:

RPTERR

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CALLED DIRECTLY BY:

CDPRE4 - EXTERNAL SCHEMA/CONCEPTUAL SCHEMA TRANSFORMATION

USED IN MAIN PROGRAM(S):

CDPRE4 - EXTERNAL SCHEMA/CONCEPTUAL SCHEMA TRANSFORMATION
TRANSFORM ES TO CS Module Documentation

NAME: CDPDI

PURPOSE: VERIFY THE EXISTENCE A MAPPED DATA ITEM

LANGUAGE: VAX-11 COBOL

MODULE TYPE: SUBROUTINE

SOURCE FILE: CDPDI

SOURCE FILE TYPE: .COB

HOST: 

SUBSYSTEM: CDM

SUBDIRECTORY: 

DOCUMENTATION GROUP: PS41231

DESCRIPTION:

PERFORM SQL SEARCH FOR THE TAG NUMBER OF THE PROJECT DATA ITEM WHOSE VIEW NUMBER AND DATA ITEM NUMBER MATCH THE INPUT ARGUMENTS AND WHOSE ID MATCHES THE CORRESPONDING DATA ITEM ID.

ARGUMENTS:

 LDA = RECRD
 CURSOR = RECRD
 MODEL-NO = DSPLY [S9(4)]
 VIEW-NO = DSPLY [S9(4)]
 DI-NO = DSPLY [S9(4)]
 TAG-NO = DSPLY [S9(4)]
 RET-STATUS = DSPLY [X(5)]

INCLUDE FILES:

 ERRCDM - I ISS ERROR STATUS CODES FOR CDMP MODULES
 CHKCDM - I ISS CDMP CHECK STATUS CODES
 ERRPRO - PROCESS ERROR INCLUDE FILE

ROUTINES CALLED:

 OSQL3
ODFINN
OBINDN
OEXEC
OFETCH
ERRPRO

CALLED DIRECTLY BY:

-----------------
CDPRE4 - EXTERNAL SCHEMA/CONCEPTUAL SCHEMA TRANSFORMATION

USED IN MAIN PROGRAM(S):

-----------------
CDPRE4 - EXTERNAL SCHEMA/CONCEPTUAL SCHEMA TRANSFORMATION
TRANSFORM ES TO CS Module Documentation

NAME: CDPRE4
PURPOSE: EXTERNAL SCHEMA/CONCEPTUAL SCHEMA TRANSFORMATION
LANGUAGE: VAX-11 COBOL
MODULE TYPE: SUBROUTINE
SOURCE FILE: CDPRE4
SOURCE FILE TYPE: .COB
HOST: SUBSYSTEM: CDM
SUBDIRECTORY: DOCUMENTATION GROUP: PS41231

DESCRIPTION:

THE FUNCTION OF THIS EXTERNAL-SCHEMA-TO-CONCEPTUAL-SCHEMA TRANSFORMER IS TO CONVERT AN NDML REQUEST EXPRESSED IN EXTERNAL SCHEMA TERMS INTO ONE OR MORE NDML REQUESTS EXPRESSED IN CONCEPTUAL SCHEMA TERMS. THE CONVERSION INVOLVES TRANSLATING EACH USER VIEW INTO THE CORRESPONDING ENTITY CLASSES AND EACH DATA ITEM INTO THE CORRESPONDING ATTRIBUTE USE CLASSES. IT ALSO INVOLVES IDENTIFYING THE RELATIONAL JOIN OPERATIONS THAT ARE NEEDED TO CONSTRUCT EACH USER VIEW TABLE FROM THE ENTITY CLASS TABLES AND IDENTIFYING THE INTEGRITY TESTS THAT WILL BE EMPLOYED WITH EACH NDML UPDATE REQUEST. THIS IMPLEMENTATION WILL NOT SUPPORT DERIVED DATA ITEMS.

ARGUMENTS:

ES-QUALIFY-LIST = RECRD
ES-ACTION-LIST = RECRD
UV-ABBR-LIST = RECRD
PARCL1 = DSPLY [X(30)]
PARCL2 = DSPLY [X(30)]
PARCL3 = DSPLY [X(30)]
PARCL4 = DSPLY [X(30)]
ORACLE-LDA = RECRD
ERROR-FILE = DSPLY [X(30)]
MY-HOST = DSPLY [XXX]
TARGET-HOST = DSPLY [XXX]
SOURCE-LANGUAGE = DSPLY [X(10)]
CODE-GENERATOR-TABLE = RECRD
IOS-IND = DSPLY [9]
USER-ERROR-COUNT = DSPLY [9(5)]
RET-STATUS = DSPLY [X(5)]

INCLUDE FILES:
---------------
ERRCDM - IISS ERROR STATUS CODES FOR CDMP MODULES
CHKCDM - IISS CDMP CHECK STATUS CODES
SDLIST - SEC-DECOMPOSITION-LIST
TJLIST - TEMP JOIN LIST
TILIST - TEMP TRANSFORM LIST
GEWORK - CS TO ES WORK LIST INFORMATION
CSQUAL - CONCEPTUAL SCHEMA QUALIFY LIST
CSAL - CONCEPTUAL SCHEMA ACTION LIST
ESQUAL - EXTERNAL SCHEMA QUALIFY LIST
ESAL - EXTERNAL SCHEMA ACTION LIST
UVAABR - USER VIEW ABBREVIATION LIST
ORCLEDA - WS DEFINITION FOR THE ORACLE LOGIN AREA
CGTABLE - CODE GENERATING TABLE- TRACKS ALL GENERATED SOFTWARE
ERRPRO - PROCESS ERROR INCLUDE FILE

ROUTINES CALLED:
------------------
OOPEN
RPTERR
CDPRE6
OCLOSE
ERRPRO
CDVIEW
CDABVW - CDABVW-GET THE VIEW NUMBER GIVEN THE USER ENTERED ABBREVIATION
CDEMDA - EXPAND ES ACTION LIST TO HOLD ALL DI NAMES FOR A USER VIEW
CDEMD - RETRIEVE EXTERNAL METADATA AND DATA ITEM NUMBER
CDPDI - VERIFY THE EXISTENCE A MAPPED DATA ITEM
CDCHMD - USING TAG NO FOR AUC DETERMINS CS DATA TYPE/SIZE/DEC DIG
CDMNEC - DETERMINE IF THE VIEW OR DATA ITEMS MAP TO MULTIPLE ENTITY CLASSE
CDPTEC - DETERMINE WHETHER VIEW MAPS TO PART OF AN ENTITY CLASS
CDINEC - RETRIEVE IND ENT FOR DEP ENT AND PERFORM TYPE1 REF INTEG TEST
CDKYUQ - SET UP KEY UNIQUENESS TEST FOR AN ENTITY
CDACAL - ADD ROWS TO THE CS-ACTION-LIST
CDATXL - ADD ROW TO TEMP-XFORM-LIST
CDRCTG - GET THE RC AND OWNER TAG OF AN INHERITED ATTRIBUTE
CDUTXL - UPDATE A ROW OF THE TEMP-XFORM-LIST
CDVTGK - VERIFY THAT A TEMP-AUG IS NOT A KEY CLASS MEMBER
CDMPIK - CHECK FOR MODIFICATION OF PARTIAL INHERITED KEY
CD1RIT - PERFORMS SQL SEARCH OF RC TABLE TO EXTRACT IND EC_NO
CDTGKW - RETRIEVE ALL TAGS TO WHICH A VIEW MAPS
CD2RIT - SETS UP TYPE 2 REFERENTIAL INTEGRITY CHECK
CDRCNR - OBTAIN RELATION CLASS NUMBER FOR NOT IN SET OPERATION
OSQL3
ODFINN
OBINDN
OEXEC
OFETCH
CDP4A
TRANSFORM ES TO CS Module Documentation

NAME: CDPTEC
PURPOSE: DETERMINE WHETHER VIEW MAPS TO PART OF AN ENTITY CLASS
LANGUAGE: VAX-11 COBOL
MODULE TYPE: SUBROUTINE
SOURCE FILE: CDPTEC
SOURCE FILE TYPE: .COB
HOST: 
SUBSYSTEM: CDM
SUBDIRECTORY: DOCUMENTATION
DOCUMENTATION GROUP: PS41231

DESCRIPTION:
---------------
INSURE THAT TAG NUMBER EXTRACTED FROM ATTRIBUTE_USE_CL MATCHES AT LEAST 1 TEMP-AUC, OTHERWISE, ERROR.

ARGUMENTS:
-----------
LDA = RECRD
CURSOR = RECRD
MODEL-NO = DSPLY [S9(4)]
TEMP-XFORM-LIST = RECRD
ES-ACTION-LIST = RECRD
ERROR-FILE = DSPLY [X(30)]
USER-ERROR-COUNT = DSPLY [9(5)]
ERROR-STATUS = DSPLY [9]
RET-STATUS = DSPLY [X(5)]

INCLUDE FILES:
------------------
ERRCDM - IISS ERROR STATUS CODES FOR CDMP MODULES
CHKCDM - IISS CDMP CHECK STATUS CODES
TXLIST - TEMP TRANSFORM LIST
ESAL - EXTERNAL SCHEMA ACTION LIST
ERRPRO - PROCESS ERROR INCLUDE FILE
ROUTINES CALLED:

- OSQL3
- ODFINN
- OBINDN
- OEXEC
- RPTERR
- OFETCH
- ERRPRO

CALLED DIRECTLY BY:

- CDPRE4 - EXTERNAL SCHEMA/CONCEPTUAL SCHEMA TRANSFORMATION

USED IN MAIN PROGRAM(S):

- CDPRE4 - EXTERNAL SCHEMA/CONCEPTUAL SCHEMA TRANSFORMATION
NAME: CDRCNR
PURPOSE: OBTAIN RELATION CLASS NUMBER FOR NOT IN SET OPERATION

LANGUAGE: VAX-11 COBOL
MODULE TYPE: SUBROUTINE
SOURCE FILE: CDRCNR
SOURCE FILE TYPE: .COB

DESCRIPTION:
-----------------
- SEARCH INHERITED ATT_USE TABLE FOR THE RC NO WHOSE TAG-NO MATCHES THE INPUT ARGUMENT.

ARGUMENTS:
-----------
LDA = RECRD
CURSOR = RECRD
MODEL-NO = DSPLY [S9(4)]
TAG-NO = DSPLY [S9(4)]
RC-NO = DSPLY [S9(4)]
RET-STATUS = DSPLY [X(5)]

INCLUDE FILES:
---------------
ERRCDM - IISS ERROR STATUS CODES FOR CDMP MODULES
CHEKCDM - IISS CDMP CHECK STATUS CODES
ERRPRO - PROCESS ERROR INCLUDE FILE

ROUTINES CALLED:
-----------------
OSQL3
ODFINN
OBINDN
OEXEC
OFETCH
ERRPRO

CALLED DIRECTLY BY:

- CDPRE4 - EXTERNAL SCHEMA/CONCEPTUAL SCHEMA TRANSFORMATION

USED IN MAIN PROGRAM(S):

- CDPRE4 - EXTERNAL SCHEMA/CONCEPTUAL SCHEMA TRANSFORMATION
NAME:            CDRCTG
PURPOSE:         GET THE RC AND OWNER TAG OF AN INHERITED
                 ATTRIBUTE
LANGUAGE:        VAX-11 COBOL
MODULE TYPE:     SUBROUTINE
SOURCE FILE:     CDRCTG
SOURCE FILE TYPE: .COB
HOST:            CDM
SUBSYSTEM:       CDM
SUBDIRECTORY:    DOCUMENTATION GROUP: PS41231

DESCRIPTION:
---------------

PERFORM SQL SEARCH OF THE INHERITED-ATT-USE TABLE LOOKING FOR
RELATION CLASS NUMBER AND KEY CLASS MEMBER TAG NUMBER WHERE
THE TAG NUMBER MATCHES THE INPUT PARAMETER.

ARGUMENTS:
----------
LDA = RECRD
CURSOR = RECRD
MODEL-NO = DSPLY [S9(4)]
TAG-NO = DSPLY [S9(4)]
RC-NO = DSPLY [S9(4)]
KCM-TAG-NO = DSPLY [S9(4)]
RET-STATUS = DSPLY [X(5)]

INCLUDE FILES:
---------------
ERRCDM          - IISS ERROR STATUS CODES FOR CDMP MODULES
CHKCDM          - IISS CDMP CHECK STATUS CODES
ERRPRO          - PROCESS ERROR INCLUDE FILE

ROUTINES CALLED:
-----------------
OSQL3
ODFINN
OBINDN
OEXEC
OFETCH
ERRPRO

CALLED DIRECTLY BY:

CDPRE4 - EXTERNAL SCHEMA/CONCEPTUAL SCHEMA TRANSFORMATION

USED IN MAIN PROGRAM(S):

CDPRE4 - EXTERNAL SCHEMA/CONCEPTUAL SCHEMA TRANSFORMATION
TRANSFORM ES TO CS Module Documentation

NAME: CDTGVW
PURPOSE: RETRIEVE ALL TAGS TO WHICH A VIEW MAPS
LANGUAGE: VAX-11 COBOL
MODULE TYPE: SUBROUTINE
SOURCE FILE: CDTGVW
SOURCE FILE TYPE: .COB
HOST: SUBSYSTEM: CDM
SUBDIRECTORY: DOCUMENTATION GROUP: PS41231

DESCRIPTION:
------------------
SELECT ALL TAGS FOR A VIEW, RETRIEVE CONCEPTUAL METADATA AND
FILL IN A ROW OF THE TEMP-XFORM-LIST FOR EACH TAG SELECTED.

ARGUMENTS:
----------
LDA = RECRD
CURSOR = RECRD
MODEL-NO = DSPLY [S9(4)]
VIEW-NO = DSPLY [S9(4)]
ES-INDEX = DSPLY [99]
NDML-COUNTER = DSPLY [999]
ERROR-FILE = DSPLY [X(30)]
TEMP-XFORM-LIST = RECRD
USER-ERROR-COUNT = DSPLY [9(5)]
ERROR-STATUS = DSPLY [9]
RET-STATUS = DSPLY [X(5)]

INCLUDE FILES:
---------------------
ERRCDM - IISS ERROR STATUS CODES FOR CDMP MODULES
CHKCDM - IISS CDMP CHECK STATUS CODES
TXLIST - TEMP TRANSFORM LIST
ERRPRO - PROCESS ERROR INCLUDE FILE
ROUTINES CALLED:

- OSQL3
- ODFINN
- OBINDN
- OEXEC
- OFETCH
- CDCMD - USING TAG NO FOR AUC DETERMINS CS DATA TYPE/SIZE/DEC DIG
- CDATXL - ADD ROW TO TEMP-XFORM-LIST
- ERRPRO

CALLED DIRECTLY BY:

- CDPRE4 - EXTERNAL SCHEMA/CONCEPTUAL SCHEMA TRANSFORMATION

USED IN MAIN PROGRAM(S):

- CDPRE4 - EXTERNAL SCHEMA/CONCEPTUAL SCHEMA TRANSFORMATION
TRANSFORM ES TO CS Module Documentation

NAME: CDUTXL
PURPOSE: UPDATE A ROW OF THE TEMP-XFORM-LIST
LANGUAGE: VAX-11 COBOL
MODULE TYPE: SUBROUTINE
SOURCE FILE: CDUTXL
SOURCE FILE TYPE: .COB
HOST:
SUBSYSTEM: CDM
SUBDIRECTORY:
DOCUMENTATION GROUP: PS41231

DESCRIPTION:


ARGUMENTS:

RC-NO = DSPLY [S9(4)]
KCM-TAG-NO = DSPLY [S9(4)]
TEMP-XFORM-LIST = RECRD

INCLUDE FILES:

TXLIST - TEMP TRANSFORM LIST

CALLED DIRECTLY BY:

CDPRE4 - EXTERNAL SCHEMA/CONCEPTUAL SCHEMA TRANSFORMATION

USED IN MAIN PROGRAM(S):

CDPRE4 - EXTERNAL SCHEMA/CONCEPTUAL SCHEMA TRANSFORMATION
TRANSFORM ES TO CS Module Documentation

NAME: CDVIEW

PURPOSE: VERIFY THE EXISTENCE OF A VIEW IN THE CDM

LANGUAGE: VAX-11 COBOL

MODULE TYPE: SUBROUTINE

SOURCE FILE: CDVIEW

SOURCE FILE TYPE: .COB

HOST:

SUBSYSTEM: CDM

SUBDIRECTORY: DOCUMENTATION

DOCUMENTATION GROUP: PS41231

DESCRIPTION:

---

PERFORM SQL SEARCH OF TABLE SEC TO VERIFY A VIEW GIVEN THE VIEW NAME. THE VIEW NUMBER IS RETURNED. IF THE VIEW DOESN'T EXIST, 0 IS RETURNED AS THE VIEW NUMBER.

ARGUMENTS:

--------

LDA = RECRD
CURSOR = RECRD
VIEW-NAME = DSPLY [X(30)]
ERROR-FILE = DSPLY [X(30)]
VIEW-NO = DSPLY [S9(4)]
USER-ERROR-COUNT = DSPLY [9(5)]
RET-STATUS = DSPLY [X(5)]

INCLUDE FILES:

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

ERRCDM - IISS ERROR STATUS CODES FOR CDMP MODULES
CHKCDM - IISS CDMP CHECK STATUS CODES
ERRPRO - PROCESS ERROR INCLUDE FILE

ROUTINES CALLED:

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

OSQL3
ODFINN
OBINDN

3-75
OEXEC
OFETCH
RPTERR
ERRPRO

CALLED DIRECTLY BY:
-----------------------
CDPRE4 - EXTERNAL SCHEMA/CONCEPTUAL SCHEMA TRANSFORMATION

USED IN MAIN PROGRAM(S):
------------------------
CDPRE4 - EXTERNAL SCHEMA/CONCEPTUAL SCHEMA TRANSFORMATION
TRANSFORM ES TO CS Module Documentation

NAME: CDVTGK

PURPOSE: VERIFY THAT A TEMP-AUC IS NOT A KEY CLASS MEMBER

LANGUAGE: VAX-11 COBOL

MODULE TYPE: SUBROUTINE

SOURCE FILE: CDVTGK

SOURCE FILE TYPE: .COB

HOST:

SUBSYSTEM: CDM

SUBDIRECTORY: DOCUMENTATION

DOCUMENTATION GROUP: PS41231

DESCRIPTION:

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

PERFORM SQL SEARCH OF KEY CLASS MEMBER ON ALL TEMP-AUCS TO VERIFY THAT THE TAG IS NOT A KEY CLASS MEMBER

ARGUMENTS:

-----------

LDA = RECRD
CURSOR = RECRD
MODEL-NUM = DSPLY [S9(4)]
TEMP-XFORM-LIST = RECRD
ES-ACTION-LIST = RECRD
ERROR-FILE = DSPLY [X(30)]
ERROR-STATUS = DSPLY [9]
USER-ERROR-COUNT = DSPLY [9(5)]
RET-STATUS = DSPLY [X(5)]

INCLUDE FILES:

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

ERRCDM - IISS ERROR STATUS CODES FOR CDMP MODULES
CHKCDM - IISS CDMP CHECK STATUS CODES
TXLIST - TEMP TRANSFORM LIST
ESAL - EXTERNAL SCHEMA ACTION LIST
ERRPRO - PROCESS ERROR INCLUDE FILE
ROUTINES CALLED:

OQL3
ODFNN
OBINDN
OEXEC
OFETCH
RPTERR
ERRPRO

CALLED DIRECTLY BY:

CDPRE4 - EXTERNAL SCHEMA/CONCEPTUAL SCHEMA TRANSFORMATION

USED IN MAIN PROGRAM(S):

CDPRE4 - EXTERNAL SCHEMA/CONCEPTUAL SCHEMA TRANSFORMATION
3.10.9 Include File Descriptions

The following list contains a purpose and description of each include file listed in 3.10.4 as specified in the source code. The language it is written in is also given.
TRANSFORM ES TO CS Include File Description

FILE NAME: GEWORK
PURPOSE: CS TO ES WORK LIST INFORMATION
LANGUAGE: VAX-11 COBOL

DESCRIPTION: 
----------
TRANFORM ES TO CS Include File Description

FILE NAME: CGTABLE
PURPOSE: CODE GENERATING TABLE—TRACKS ALL GENERATED SOFTWARE
LANGUAGE: VAX-11 COBOL
DESCRIPTION:

CODE GENERATOR TABLE, HOLDS PERTINENT RESULTS ABOUT ALL CODE GENERATED OR MODIFIED BY THE PRECOMPILED NOTE: ROW 100 RESERVED FOR SWAPPING DURING SORTING.
TRANSFORM ES TO CS Include File Description

FILE NAME: CHXCDM
PURPOSE: IISS CDMP CHECK STATUS CODES
LANGUAGE: VAX-11 COBOL

DESCRIPTION:
---------------
CONTAINS ALL STATUS CODES FOR THE CDMP MODULES
TRANSFORM ES TO GS Include File Description

FILE NAME: GSAL
PURPOSE: CONCEPTUAL SCHEMA ACTION LIST
LANGUAGE: VAX-11 COBOL

DESCRIPTION:

---------

TABLE TO HOLD CONCEPTUAL DATA ABOUT THE REQUEST

***** THE CONCEPTUAL SCHEMA ACTION LIST
FILE NAME: CSQUAL
PURPOSE: CONCEPTUAL SCHEMA QUALIFY LIST
LANGUAGE: VAX-11 COBOL

DESCRIPTION:

CONTAINS CONCEPTUAL SCHEMA INFORMATION FOR THE REQUESTS QUALIFICATION

THE CONCEPTUAL SCHEMA QUALIFY LIST
TRANSFORM ES TO CS Include File Description

FILE NAME: ERRCDM
PURPOSE: IISS ERROR STATUS CODES FOR CDMP MODULES
LANGUAGE: VAX-11 COBOL

DESCRIPTION:
---------------
CONTAINS ALL ERROR CODES USED BY CDMP
MODULES FOR ERROR HANDLING
<table>
<thead>
<tr>
<th><strong>FILE NAME:</strong></th>
<th>ERRPRO</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PURPOSE:</strong></td>
<td>PROCESS ERROR INCLUDE FILE</td>
</tr>
<tr>
<td><strong>LANGUAGE:</strong></td>
<td>VAX-11 COBOL</td>
</tr>
<tr>
<td><strong>DESCRIPTION:</strong></td>
<td>---------</td>
</tr>
</tbody>
</table>
TRANSFORM ES TO CS Include File Description

FILE NAME: ESAL
PURPOSE: EXTERNAL SCHEMA ACTION LIST
LANGUAGE: VAX-11 COBOL

DESCRIPTION:
---------------

CONTAINS THE EXTERNAL SCHEMA INFORMATION FOR AN NDML REQUEST

THE EXTERNAL SCHEMA ACTION LIST

3-87
FILE NAME: ESQUAL
PURPOSE: EXTERNAL SCHEMA QUALIFY LIST
LANGUAGE: VAX-11 COBOL

DESCRIPTION:

CONTAINS EXTERNAL SCHEMA INFORMATION FOR THE NDML QUALIFICATION

THE EXTERNAL SCHEMA QUALIFY LIST
TRANSFORM ES TO CS Include File Description

FILE NAME: ORCLEDA
PURPOSE: WS DEFINITION FOR THE ORACLE LOGIN AREA
LANGUAGE: VAX-11 COBOL

DESCRIPTION:

THE ORACLE LOGON DATA AREA
TRANSFORM ES TO CS Include File Description

FILE NAME: SDLIST
PURPOSE: SEC-DECOMPOSITION-LIST
LANGUAGE: VAX-11 COBOL

DESCRIPTION:

THIS LIST REPRESENTS ALL ENTITY CLASSES AND RELATIONS MAKING UP EITHER THE SURROGATE ENTITY CLASS OR THE COMBINATION OF SEC'S RESULTING FROM JOINS IN THE NDML SELECT STATEMENT. THIS TABLE IS USED AS INPUT TO ROUTINE CDP4A WHICH CAN VERIFY THE LEGALITY OF A SEC STRUCTURE.
TRANFORM ES TO CS Include File Description

FILE NAME: TJLIST
PURPOSE: TEMP JOIN LIST
LANGUAGE: VAX-11 COBOL

DESCRIPTION:

THIS WILL TEMPORARILY STORE META-DATA ABOUT JOINED ENTITY
CLASSES MAKING UP AN SEC
TRANSFORM ES TO CS Include File Description

<table>
<thead>
<tr>
<th>FILE NAME:</th>
<th>TXLIST</th>
</tr>
</thead>
<tbody>
<tr>
<td>PURPOSE:</td>
<td>TEMP TRANSFORM LIST</td>
</tr>
<tr>
<td>LANGUAGE:</td>
<td>VAX-11 COBOL</td>
</tr>
</tbody>
</table>

DESCRIPTION:

THIS WILL TEMPORARILY STORE METADATA ABOUT AN NDML UPDATE REQUEST EXPRESSED IN CS TERMS (INTERNAL TO PRE4)
TRANSFORM ES TO CS Include File Description

FILE NAME: UVABBR
PURPOSE: USER VIEW ABBREVIATION LIST
LANGUAGE: VAX-11 COBOL

DESCRIPTION:

CONTAINS THE ABBREVIATIONS FOR ALL USER VIEW REFERENCED IN THE NDML REQUEST
3.10.10 Hierarchy Chart

The following hierarchy charts show the relationships between all of the modules mentioned in the above documentation. A module may call a subroutine several times within its code, but the call will only be shown once as a single relationship on this hierarchy chart. All modules shown at the top of the first page are considered Main Programs as described in section 3.10.1 above.

There is an internal paging scheme as marked by the numbers in the upper right corner of each page. An index after the last page of the chart shows where a routine and its calls are first defined. If a routine has no page reference, it either makes no calls or is an external routine. A continuation box on the end of a tree limb shows where that the tree continues on the page numbered mentioned. A number in a box with a routine name points to the page where the routine is further defined within the hierarchy tree. If there is no number in a box, the routine either makes no calls or is an external routine.
PS 620141231
1 November 1985

\[
\begin{align*}
\text{CDPRE4} & \quad \text{CDVIEW} & \quad \text{CDABW} & \quad \text{CDEMDA} & \quad \text{CDemd} & \quad \text{(CONT)} \\
\text{---1} & \quad \text{---3} & \quad \text{---4} & \quad \text{---5} & \quad \text{---6} \\
\end{align*}
\]
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1 November 1985

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<table>
<thead>
<tr>
<th>CD2RIT</th>
</tr>
</thead>
</table>

+--++--+
| IOSQL3 |
| ODFINN |
| OBINDN |
| OEXEC |
| OFETCH |
| (CONT) |

+--++--+
| 3-122 |
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1 November 1985

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+---------+
|CDPRE4|    
+---------+

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|        |
|        |
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|        |
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|        |
|        |
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|        |
|        |

+---------+  +---------+  +---------+
|OFETCH|    |CDP4A|    |        |
+-------+-----+-----+-----+
CD1RIT...26
CD2RIT...28
CDABVW
CDACAL...12
CDACAQ...18
CDATXL...12
CDCHMD...10
CDEMD...5
CDEMDA...4
CDINEC...15
CKKYUQ...16
CDMPIK...22
CDNNEC...6
CDP4A
CDPDI.....9
CDPRE4...1
CDPRE6
CDPTEC...11
CDRCNR...29
CDRCTG...20
CDTGAV...27
CDUTXL
CDVIEW....3
CDVTGK...21
ERRPRO
OBINDN
OCLOSE
ODFNN
OEXEC
OFETCH
OOPEN
OSQL3
RPTERR

3.11 Program Listings Comments

This information is contained in the Module Descriptions in section 3.10.
4.1 Introduction and Definitions

"Testing" is a systematic process that may be preplanned and explicitly stated. Test techniques and procedures may be defined in advance, and a sequence of test steps may be specified. "Debugging" is the process of isolation and correction of the cause of an error.

"Antibugging" is defined as the philosophy of writing programs in such a way as to make bugs less likely to occur and when they do occur, to make them more noticeable to the programmer and the user. In other words, as much error checking as is practical and possible in each routine should be performed.

4.2 Computer Programming Test and Evaluation

The quality assurance provisions for test consists of the normal testing techniques that are accomplished during the construction process. They consist of design and code walk-throughs, unit testing, and integration testing. These tests are performed by the design team. Structured design, design walk-through and the incorporation of "antibugging" facilitate this testing by exposing and addressing problem areas before they become coded "bugs."
END

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