MICROCOPY RESOLUTION TEST CHART
INTEGRATED INFORMATION
SUPPORT SYSTEM (IISS)
Volume V - Common Data Model Subsystem
Part 29 - Data Aggregators Product Specification

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

November 1985

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This technical report has been reviewed and is approved for publication.

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5 Aug 1986  

FOR THE COMMANDER:

[Signature]  
GERALD C. SHUMAKER, BRANCH CHIEF  
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7 Aug 86

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Copies of this report should not be returned unless return is required by security considerations, contractual obligations, or notice on a specific document."
This document is the product specification establishing the design implementation of the IISS Configuration Item Data Aggregators which combine the various sub results of distributed data requests by using the relational operations of JOIN, UNION and DIFFERENCE.
11. Title

Integrated Information Support System (IISS)
Vol V - Common Data Model Subsystem
Part 29 - Data Aggregators Product Specification

A S D 86 1436
17 Jul 1986
PREFACE

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**

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<th>Subcontractors</th>
<th>Role</th>
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</thead>
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<tr>
<td>Boeing Military Aircraft Company (EMAC)</td>
<td>Reviewer.</td>
</tr>
<tr>
<td>D. Appleton Company (DAGOM)</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>
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### Subcontractors

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<tr>
<td>Illinois Institute of Technology</td>
<td>Responsible for factory view function research (IITRI) and information models of small and medium-size business.</td>
</tr>
<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>
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<tr>
<td>Pritsker and Associates</td>
<td>Responsible for IDEF2 support.</td>
</tr>
<tr>
<td>SofTech</td>
<td>Responsible for IDEF0 support.</td>
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### TASKS 4.3 - 4.9 (TEST BED)

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<th>Role</th>
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<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>
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</table>
Subcontractors

Digital Equipment Corporation (DEC)

McDonnell Douglas Automation Company (McAuto)

On-Line Software International (OSI)

Rath and Strong Systems Products (RSSP) (In 1985 became McCormack & Dodge)

SofTech, Inc.

Software Performance Engineering (SPE)

Structural Dynamics Research Corporation (SDRC)

Role

Consulting and support of the performance testing and on DEC software and computer systems operation.

Responsible for the support and enhancements to the Network Transaction Manager Subsystem during 1984/1985 period.

Responsible for programming the Communications Subsystem on the IBM and for consulting on the IBM.

Responsible for assistance in the implementation and use of the MRP II package (PIOS) that they supplied.

Responsible for the design and implementation of the Network Transaction Manager (NTM) in 1981/1984 period.

Responsible for directing the work on performance evaluation and analysis.

Responsible for the User Interface and Virtual Terminal Interface Subsystems.

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

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<td>Boeing Military Aircraft Company</td>
<td>1701, 2201, 2202</td>
<td>Enhancements for IBM node use. Technology Transfer to Integrated Sheet Metal Center (ISMC).</td>
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<td>Control Data Corporation (CDC)</td>
<td>1502, 1701</td>
<td>IISS enhancements to Common Data Model Processor (CDMP).</td>
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<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>
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<td>Structural Dynamics Research Corp</td>
<td>1502, 1701, 1703</td>
<td>IISS enhancements to User Interface/Virtual Terminal Interface (UI/VTI).</td>
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SECTION 1

SCOPE

1.1 Identification

This specification establishes the design of the Aggregator Functions, one of the major functions of the Configuration Item—Common Data Model Processor (CDMP)—to be built and formally accepted by the ICAM Program Office. This CI constitutes one of the subsystems of the Common Data Model Processor (CDM).

1.2 Functional Summary

The purpose of this Computer Program Configuration Item (CPCI) is to aggregate the query output files and produce the result file of the aggregation.

The following functions are performed by all three aggregators.

1. This CPCI receives and unpacks a message from the Network Transaction Manager and builds the appropriate tables that contain the descriptions of the files that are to be aggregated.

2. A sort is performed on both input files based on the key(s) of each file.

3. Individual Aggregator Functions:

   a. UNION: The Union Aggregator does a sort/merge to combine the two files into the result file. The sort/merge is based on ascending values with a compare between each key in each file. The result file contains the combined input files.

   b. NOT IN SET: The MIS Aggregator compares the two sorted input files based on the keys and determines if any key value from the first input file is in the second input file. If true, then the record from the first input file is discarded and the compare continues looking for file 1 keys that do not match file 2 keys. The results file contains input file 1 records that do not match.

   c. JOIN: The Join Aggregator combines two sorted
input files based on the keys and determines if the key value from the first input file is equal to the keys in second input file. If false, then the record is discarded. If true, the record is used to form the result file.

4. The results of each aggregator are written to a result file described in the initial message.

5. The aggregators send a completion message to the NTM containing the status of the aggregation, the name of the result file and the count of the records in the file.
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 references
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 terminal supported.
SECTION 3

REQUIREMENTS

3.1 Structural Description

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

The Union Aggregator uses the lower level module to handle specific operations. An example of this type of operation is the VAX-11 sort/merge utility to combine two input files.

The Not in Set Aggregator uses the following lower level modules to handle specific operations such as:

1. Not in set sort routine (NISSORT)
2. Opens the input and output NIS files (NISOPEN)
3. Control the comparison of the NIS fields (NISCMD)
4. Reads the NIS file and create character buffer (NISREAD)
5. Write the NIS buffer to results file (NISWRIT)
6. Close the NIS files (NISCLOS)

The Join Aggregator uses the following lower level modules to handle specific operations such as:

1. Create a relative address file (CDF). (CRTHDR).
2. Create the relative access file for rel. (CRTCDR).
3. Determine in words size of the record (CALCRL).
4. Populate attribute data item (CRTATR).
5. Sorting a file (SORT).
6. Store the sorting criteria for a single attribute (SRTATT).
7. Retrieve the next record from the CDF file (GETREL).
8. Retrieve contents of entity class (GET).
9. Retrieve an attribute from a record (GETFLD).
10. DB AP used to init/change an att value (PUTATT).
11. Write current record (WRTCDR).
12. Update header record (UPDHDR).
13. Write the relative file to join result file (RDRSFL).
14. Close all files used by the aggregators (RDRCLS).

3.2 Functional Flow

This CPCI implemented the logic defined in the Development Specification for this CPCI. Details of inputs/outputs and relationships between modules are 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, the Network Transaction Manager. It currently can only be executed on the DEC VAX due to the dependence on the VAX sort although this has been identified for change for execution on the IBM.

3.3 Interfaces

The following diagram depicts the interface of the Aggregator and the other CPCI's.
3.3.1 Inputs/Outputs

The following table shows 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><strong>UNION:</strong></td>
<td></td>
</tr>
<tr>
<td>Input File Names</td>
<td>Result File Name</td>
</tr>
<tr>
<td>Results File Name</td>
<td>Status</td>
</tr>
<tr>
<td>Attribute Pair List (Keys)</td>
<td></td>
</tr>
<tr>
<td>Results Field Table (Key Desc)</td>
<td></td>
</tr>
<tr>
<td><strong>NOT IN SET:</strong></td>
<td></td>
</tr>
<tr>
<td>Input File Names</td>
<td>Results File Name</td>
</tr>
<tr>
<td>Results File Name</td>
<td>Status</td>
</tr>
<tr>
<td>Attribute Pair List</td>
<td>Number of Records</td>
</tr>
<tr>
<td>Results Field Table for Each Input File</td>
<td>in Result File</td>
</tr>
<tr>
<td>Results Field Table for Results File</td>
<td></td>
</tr>
</tbody>
</table>

3.4 Program Interrupts

Not applicable to this CPCI.

3.5 Timing and Sequencing Description

This CPCI is activated for each aggregation called for by the distributed request supervisor (DRS).

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. The model is defined by the CDMI, the IDEF1 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 input and output 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 team using defined IISS Software Configuration Management procedures. This CPCI will use the COBOL and FORTRAN language compilers.

3.9 Adaptation Data

This CPCI has been using ANSI COBOL and FORTRAN languages. The intent was to provide a transportable system. Any system environment supporting these languages, a virtual memory management schema, the COHM and NTM subsystems of IISS and the ORACLE Database Management System should be able 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 Detail 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

3-5
is truly a main program entry point. If not, then it is merely called by other programs not being documented here.
DATA AGGREGATORS Main Program List

<table>
<thead>
<tr>
<th>Module Name</th>
<th>Purpose</th>
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<tr>
<td>ANAATT</td>
<td>DETERMINE LEGALITY OF ATTRIBUTE NAME</td>
</tr>
<tr>
<td>ANABOO</td>
<td>VERIFY A BOOLEAN CONDITION</td>
</tr>
<tr>
<td>ANAREL</td>
<td>DETERMINE VALIDITY OF RELATIONAL OPERATOR</td>
</tr>
<tr>
<td>ANAVAL</td>
<td>CONVERT VALUE OF ATTRIBUTE TYPE</td>
</tr>
<tr>
<td>CDJO1</td>
<td>AGGREGATOR JOIN FUNCTION</td>
</tr>
<tr>
<td>CDN01</td>
<td>AGGREGATOR NOT IN SET FUNCTION</td>
</tr>
<tr>
<td>CDU01</td>
<td>AGGREGATOR UNION FUNCTION</td>
</tr>
<tr>
<td>CONCAT</td>
<td>CONCATENATE TWO STRINGS</td>
</tr>
<tr>
<td>HOLCHR</td>
<td>CONVERT DATA FROM HOLLERITH TO CHARACTER</td>
</tr>
<tr>
<td>RDCDFR</td>
<td>**** PURPOSE NOT FOUND BY STRIPPER ****</td>
</tr>
<tr>
<td>RELFTN</td>
<td>CONVERT REAL NUMBER TO CHARACTER STRING</td>
</tr>
</tbody>
</table>
3.10.2 Module List

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

<table>
<thead>
<tr>
<th>Module Name</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACTLEN</td>
<td>DETERMINE LENGTH OF CHARACTER STRING</td>
</tr>
<tr>
<td>ADDCHN</td>
<td>ADD ATTRIBUTE TO LINKED LIST</td>
</tr>
<tr>
<td>ANAATT</td>
<td>DETERMINE LEGALITY OF ATTRIBUTE NAME</td>
</tr>
<tr>
<td>ANABOO</td>
<td>VERIFY A BOOLEAN CONDITION</td>
</tr>
<tr>
<td>ANAREL</td>
<td>DETERMINE VALIDITY OF RELATIONAL OPERATOR</td>
</tr>
<tr>
<td>ANAVAL</td>
<td>CONVERT VALUE OF ATTRIBUTE TYPE</td>
</tr>
<tr>
<td>CALCRL</td>
<td>DETERMINE IN WORDS .SIZE OF THE RECORD</td>
</tr>
<tr>
<td>CDJO1</td>
<td>AGGREGATOR JOIN FUNCTION</td>
</tr>
<tr>
<td>CDN01</td>
<td>AGGREGATOR NOT IN SET FUNCTION</td>
</tr>
<tr>
<td>CDU01</td>
<td>AGGREGATOR UNION FUNCTION</td>
</tr>
<tr>
<td>CHGPTR</td>
<td>ADJUST COMMON DATA RECORD POINTER</td>
</tr>
<tr>
<td>CHKRNNG</td>
<td>PERFORM ATTRIBUTE VALUE RANGE CHECKS</td>
</tr>
<tr>
<td>CHREAL</td>
<td>CHARACTER TO REAL CONVERSIONS</td>
</tr>
<tr>
<td>CHRHOL</td>
<td>CONVERT CHAR STRING TO INTEGER ARRAY</td>
</tr>
<tr>
<td>CHRINT</td>
<td>CHARACTER TO INTEGER CONVERSION</td>
</tr>
<tr>
<td>Module Name</td>
<td>Purpose</td>
</tr>
<tr>
<td>-------------</td>
<td>---------</td>
</tr>
<tr>
<td>CONCAT</td>
<td>CONCATENATE TWO STRINGS</td>
</tr>
<tr>
<td>CONDIG</td>
<td>CONVERTS SIGN OF SIGNED VALUE TO DIGIT VAL</td>
</tr>
<tr>
<td>CRTATR</td>
<td>POPULATE ATTRIBUTE DATA ITEMS</td>
</tr>
<tr>
<td>CRTBUF</td>
<td>CREATE CHAR. STRING FOR FIELD COMPARISON</td>
</tr>
<tr>
<td>CRTCDR</td>
<td>CREATE THE RELATIVE ACCESS FILE FOR REL.</td>
</tr>
<tr>
<td>CRTHDR</td>
<td>CREATE A RELATIVE ADDRESS FILE (CDF)</td>
</tr>
<tr>
<td>FORCLS</td>
<td>CLOSE ALL FILES USED BY THE AGGREGATORS</td>
</tr>
<tr>
<td>GACHK</td>
<td>CHECK INPUT PARAMETERS OF 'GETATT' CALL</td>
</tr>
<tr>
<td>GAINFO</td>
<td>STORE ATTRIBUTE INFORMATION IN COMMON BLOCK**</td>
</tr>
<tr>
<td>GET</td>
<td>RETRIEVE CONTENTS OF ENTITY CLASS</td>
</tr>
<tr>
<td>GETATT</td>
<td>RETRIEVE ATTRIBUTE INFORMATION</td>
</tr>
<tr>
<td>GETCHK</td>
<td>CHECK INPUT PARAMETERS OF 'GET' FOR ERRORS</td>
</tr>
<tr>
<td>GETFLD</td>
<td>RETRIEVE AN ATTRIBUTE FROM A RECORD</td>
</tr>
<tr>
<td>GETITM</td>
<td>EXTRACT ATTRIBUTE VALUE FROM USER'S BUFFER</td>
</tr>
</tbody>
</table>
DATA AGGREGATORS Module List

<table>
<thead>
<tr>
<th>Module Name</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>GETPTR</td>
<td>DETERMINE NEXT CURRENT RECORD POINTER</td>
</tr>
<tr>
<td>GETREL</td>
<td>RETRIEVE THE NEXT RECORD FROM THE CDF FILE</td>
</tr>
<tr>
<td>HOLCHR</td>
<td>CONVERT DATA FROM HOLLERITH TO CHARACTER</td>
</tr>
<tr>
<td>INTCHR</td>
<td>CONVERT INTEGER VALUE TO CHARACTER STRING</td>
</tr>
<tr>
<td>INTSRT</td>
<td>FILL KEY ARRAY USED BY THE VAX SORT ROUTINE**</td>
</tr>
<tr>
<td>NISCLOS</td>
<td>THIS PROCESS CLOSES THE NIS FILES</td>
</tr>
<tr>
<td>NISCMD</td>
<td>CONTROL THE COMPARISON OF THE NIS FIELDS</td>
</tr>
<tr>
<td>NISINT</td>
<td>CONVERTS A STRING NUMBER TO AN INTEGER</td>
</tr>
<tr>
<td>NISOPEN</td>
<td>OPENS THE INPUT AND OUTPUT NIS FILES</td>
</tr>
<tr>
<td>NISREAD</td>
<td>READS THE NIS FILE AND CREATE CHAR BUFFER</td>
</tr>
<tr>
<td>NISREL</td>
<td>CONVERTS CHAR STRING TO REAL VAL W/NO DIGIT**</td>
</tr>
<tr>
<td>NISSORT</td>
<td>NOT-IN-SET SORT ROUTINE</td>
</tr>
<tr>
<td>NISWRIT</td>
<td>TO WRITE THE NIS BUFFER TO RESULTS FILE</td>
</tr>
<tr>
<td>PACHK</td>
<td>CHECK THE PARAMETERS OF THE PUTATT CALL</td>
</tr>
</tbody>
</table>
DATA AGGREGATORS Module List

<table>
<thead>
<tr>
<th>Module Name</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>PUTATT</td>
<td>DB AP USED TO INIT/CHANGE AN ATT VALUE</td>
</tr>
<tr>
<td>PUTITM</td>
<td>CONVERTS VAL SUPPLIED AND STORES IN BUFFER</td>
</tr>
<tr>
<td>RDCDFR</td>
<td>**** PURPOSE NOT FOUND BY STRIPPER ****</td>
</tr>
<tr>
<td>RDCDR</td>
<td>RETURN THE CONTENTS OF A COMMON DATA RECORD**</td>
</tr>
<tr>
<td>RDHDR</td>
<td>READ HEADER RECORD TO DETERMINE PROCESSING</td>
</tr>
<tr>
<td>RDRSFL</td>
<td>WRITE THE RELATIVE FILE TO JOIN RESULT FILE**</td>
</tr>
<tr>
<td>REALCH</td>
<td>CONVERT REAL NUMBER TO CHARACTER STRING</td>
</tr>
<tr>
<td>RELFTN</td>
<td>CONVERT REAL NUMBER TO CHARACTER STRING</td>
</tr>
<tr>
<td>RETCDR</td>
<td>SORTING AND WRITE RECORD</td>
</tr>
<tr>
<td>SACHK</td>
<td>SORTING THE ATTRIBUTE RECORDS</td>
</tr>
<tr>
<td>SORT</td>
<td>SORTING A FILE</td>
</tr>
<tr>
<td>SRTATT</td>
<td>STORE THE SORTING CRITERIA FOR A SINGLE ATTRIBUTE **</td>
</tr>
<tr>
<td>SRTCDR</td>
<td>SORTING THE COMMON DATA RECORD</td>
</tr>
<tr>
<td>TRMSRT</td>
<td>TERMINATE THE SORTING</td>
</tr>
</tbody>
</table>
### DATA AGGREGATORS Module List

<table>
<thead>
<tr>
<th>Module Name</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>UPDHDR</td>
<td>UPDATE HEADER RECORD</td>
</tr>
<tr>
<td>WRTATT</td>
<td>WRITE ATTRIBUTE RECORD</td>
</tr>
<tr>
<td>WRTCDR</td>
<td>WRITE CURRENT RECORD</td>
</tr>
<tr>
<td>WRTHDR</td>
<td>WRITE RECORD HEADER</td>
</tr>
<tr>
<td>WRTREL</td>
<td>WRITE A RECORD TO THE RESULT FILE</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.
DATA AGGREGATORS External Routines List

<table>
<thead>
<tr>
<th>Module Name</th>
<th>First User</th>
</tr>
</thead>
<tbody>
<tr>
<td>BLANKH</td>
<td>ANAVAL</td>
</tr>
<tr>
<td>DELFIL</td>
<td>CDJO1</td>
</tr>
<tr>
<td>ERRPRO</td>
<td>CDUO1</td>
</tr>
<tr>
<td>FOR$CLOSE</td>
<td>RDRSFL</td>
</tr>
<tr>
<td>FOR$INQUIRE</td>
<td>SORT</td>
</tr>
<tr>
<td>FOR$OPEN</td>
<td>NISOPEN</td>
</tr>
<tr>
<td>GENFIL</td>
<td>CDN01</td>
</tr>
<tr>
<td>INITAL</td>
<td>CDN01</td>
</tr>
<tr>
<td>LIB$INDEX</td>
<td>GETPTR</td>
</tr>
<tr>
<td>NSEND</td>
<td>CDN01</td>
</tr>
<tr>
<td>RCV</td>
<td>CDJO1</td>
</tr>
<tr>
<td>RMATR</td>
<td>ANAVAL</td>
</tr>
<tr>
<td>SIGERR</td>
<td>CDUO1</td>
</tr>
<tr>
<td>SOR$END_SORT</td>
<td>CDUO1</td>
</tr>
<tr>
<td>SOR$INIT_SORT</td>
<td>CDUO1</td>
</tr>
<tr>
<td>SOR$PASS_FILES</td>
<td>CDUO1</td>
</tr>
<tr>
<td>SOR$RELEASE_REC</td>
<td>SRTCDR</td>
</tr>
<tr>
<td>SOR$RETURN_REC</td>
<td>RETCDR</td>
</tr>
<tr>
<td>SOR$SORT_MERGE</td>
<td>NISSORT</td>
</tr>
<tr>
<td>STRMOV</td>
<td>CDJO1</td>
</tr>
<tr>
<td>TOKEN</td>
<td>ANAREL</td>
</tr>
<tr>
<td>TRMNAT</td>
<td>CDJO1</td>
</tr>
<tr>
<td>WHTHST</td>
<td>CDUO1</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.
DATA AGGREGATORS Include File List

<table>
<thead>
<tr>
<th>File Name</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>AGGMSG</td>
<td>AGGREGATOR INPUT MESSAGE</td>
</tr>
<tr>
<td>APL</td>
<td>JOIN QUERY ATTRIBUTE PAIR LIST</td>
</tr>
<tr>
<td>ATTRINF.INF</td>
<td>PURPOSE NOT FOUND BY STRIPPER ****</td>
</tr>
<tr>
<td>CHKCDM</td>
<td>IISS CDMP CHECK STATUS CODES</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>HDRINFO.INF</td>
<td>PURPOSE NOT FOUND BY STRIPPER ****</td>
</tr>
<tr>
<td>JQGtbl</td>
<td>JOIN QUERY GRAPH TELLS HOW TO CONNECT SUBTRANSACTIONS</td>
</tr>
<tr>
<td>MACHDEP.INF</td>
<td>PURPOSE NOT FOUND BY STRIPPER ****</td>
</tr>
<tr>
<td>RFTAB2</td>
<td>THE RESULT FIELD TABLE</td>
</tr>
<tr>
<td>RFTABLE</td>
<td>THE RESULT FIELD TABLE</td>
</tr>
<tr>
<td>SRVRET</td>
<td>AS THE RETURN GIVEN A TABLE-FULL ERROR</td>
</tr>
<tr>
<td>STDRESP</td>
<td>WS DEFINITION FOR STANDARD STATUS VARIABLE</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.
DATA AGGREGATORS Where-include-file-used List

<table>
<thead>
<tr>
<th>Include File</th>
<th>Module Name</th>
<th>Module Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>CDJO1</td>
<td>AGGREGATOR JOIN FUNCTION</td>
</tr>
<tr>
<td></td>
<td>CDNO1</td>
<td>AGGREGATOR NOT IN SET FUNCTION</td>
</tr>
<tr>
<td></td>
<td>CDUO1</td>
<td>AGGREGATOR UNION FUNCTION</td>
</tr>
</tbody>
</table>

APL

<table>
<thead>
<tr>
<th>Include File</th>
<th>Module Name</th>
<th>Module Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>CDJO1</td>
<td>AGGREGATOR JOIN FUNCTION</td>
</tr>
<tr>
<td></td>
<td>CDNO1</td>
<td>AGGREGATOR NOT IN SET FUNCTION</td>
</tr>
</tbody>
</table>

ATTRINF.INF

<table>
<thead>
<tr>
<th>ADDCHN</th>
<th>ADD ATTRIBUTE TO LINKED LIST</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANAATT</td>
<td>DETERMINE LEGALITY OF ATTRIBUTE NAME</td>
</tr>
<tr>
<td>CRTATR</td>
<td>POPULATE ATTRIBUTE DATA ITEMS</td>
</tr>
<tr>
<td>GACHK</td>
<td>CHECK INPUT PARAMETERS OF 'GETATT' CALL</td>
</tr>
<tr>
<td>GAINFO</td>
<td>STORE ATTRIBUTE INFORMATION IN COMMON BLOCK**</td>
</tr>
<tr>
<td>GETATT</td>
<td>RETRIEVE ATTRIBUTE INFORMATION</td>
</tr>
<tr>
<td>INTSRT</td>
<td>FILL KEY ARRAY USED BY THE VAX SORT ROUTINE**</td>
</tr>
<tr>
<td>PACHK</td>
<td>CHECK THE PARAMETERS OF THE PUTATT CALL</td>
</tr>
<tr>
<td>PUTATT</td>
<td>DB AP USED TO INIT/CHANGE AN ATT VALUE</td>
</tr>
<tr>
<td>SACHK</td>
<td>SORTING THE ATTRIBUTE RECORDS</td>
</tr>
<tr>
<td>WRTATT</td>
<td>WRITE ATTRIBUTE RECORD</td>
</tr>
</tbody>
</table>

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DATA AGGREGATORS Where-include-file-used List

<table>
<thead>
<tr>
<th>Include File</th>
<th>Module Name</th>
<th>Module Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**CHKCDM**
- CDJ01: AGGREGATOR JOIN FUNCTION
- CDN01: AGGREGATOR NOT IN SET FUNCTION
- CDU01: AGGREGATOR UNION FUNCTION

**ERRCDM**
- CDJ01: AGGREGATOR JOIN FUNCTION
- CDN01: AGGREGATOR NOT IN SET FUNCTION
- CDU01: AGGREGATOR UNION FUNCTION
- NISSORT: NOT-IN-SET SORT ROUTINE

**ERRPRO**
- CDJ01: AGGREGATOR JOIN FUNCTION
- CDN01: AGGREGATOR NOT IN SET FUNCTION
- CDU01: AGGREGATOR UNION FUNCTION
- NISSORT: NOT-IN-SET SORT ROUTINE

**HDRINFO.INF**
- ADDCHN: ADD ATTRIBUTE TO LINKED LIST
- ANAATT: DETERMINE LEGALITY OF ATTRIBUTE NAME
- CHGFPTR: ADJUST COMMON DATA RECORD POINTER
- CRTCDR: CREATE THE RELATIVE ACCESS FILE FOR REL.
DATA AGGREGATORS Where-include-file-used List

<table>
<thead>
<tr>
<th>Include File</th>
<th>Module Name</th>
<th>Module Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>CRTHDR</td>
<td>CREATE A RELATIVE ADDRESS FILE (CDF)</td>
<td></td>
</tr>
<tr>
<td>GET</td>
<td>RETRIEVE CONTENTS OF ENTITY CLASS</td>
<td></td>
</tr>
<tr>
<td>GETATT</td>
<td>RETRIEVE ATTRIBUTE INFORMATION</td>
<td></td>
</tr>
<tr>
<td>GETCHK</td>
<td>CHECK INPUT PARAMETERS OF 'GET' FOR ERRORS</td>
<td></td>
</tr>
<tr>
<td>INTSRT</td>
<td>FILL KEY ARRAY USED BY THE VAX SORT ROUTINE**</td>
<td></td>
</tr>
<tr>
<td>PUTATT</td>
<td>DB AP USED TO INIT/CHANGE AN ATT VALUE</td>
<td></td>
</tr>
<tr>
<td>RDCDFR</td>
<td>**** PURPOSE NOT FOUND BY STRIPPER ****</td>
<td></td>
</tr>
<tr>
<td>RDHDR</td>
<td>READ HEADER RECORD TO DETERMINE PROCESSING</td>
<td></td>
</tr>
<tr>
<td>RDRSFL</td>
<td>WRITE THE RELATIVE FILE TO JOIN RESULT FILE**</td>
<td></td>
</tr>
<tr>
<td>RETCDR</td>
<td>SORTING AND WRITE RECORD</td>
<td></td>
</tr>
<tr>
<td>SACHK</td>
<td>SORTING THE ATTRIBUTE RECORDS</td>
<td></td>
</tr>
<tr>
<td>SORT</td>
<td>SORTING A FILE</td>
<td></td>
</tr>
<tr>
<td>SRTATT</td>
<td>STORE THE SORTING CRITERIA FOR A SINGLE ATTRIBUTE **</td>
<td></td>
</tr>
<tr>
<td>TRMSRT</td>
<td>TERMINATE THE SORTING</td>
<td></td>
</tr>
<tr>
<td>UPDHDR</td>
<td>UPDATE HEADER RECORD</td>
<td></td>
</tr>
<tr>
<td>WRTHDR</td>
<td>WRITE RECORD HEADER</td>
<td></td>
</tr>
</tbody>
</table>

JQGTBL

| CJDO1 | AGGREGATOR JOIN FUNCTION |
| CJNO1 | AGGREGATOR NOT IN SET FUNCTION |
DATA AGGREGATORS Where-include-file-used List

<table>
<thead>
<tr>
<th>Include File</th>
<th>Module Name</th>
<th>Module Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**MACHDEP.INF**
- CALCRL: DETERMINE IN WORDS, SIZE OF THE RECORD
- CHRHOL: CONVERT CHAR STRING TO INTEGER ARRAY
- HOLCHR: CONVERT DATA FROM HOLLERITH TO CHARACTER

**RFTAB2**
- CDN01: AGGREGATOR NOT IN SET FUNCTION

**RFTABLE**
- CDJ01: AGGREGATOR JOIN FUNCTION
- CDN01: AGGREGATOR NOT IN SET FUNCTION
- CDU01: AGGREGATOR UNION FUNCTION

**SRVRET**
- CDJ01: AGGREGATOR JOIN FUNCTION
- CDN01: AGGREGATOR NOT IN SET FUNCTION
- CDU01: AGGREGATOR UNION FUNCTION

**STDRESP**
- CDJ01: AGGREGATOR JOIN FUNCTION
- CDN01: AGGREGATOR NOT IN SET FUNCTION
DATA AGGREGATORS Where-include-file-used List

<table>
<thead>
<tr>
<th>Include File</th>
<th>Module Name</th>
<th>Module Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>CDU01</td>
<td>AGGREGATOR</td>
<td>UNION FUNCTION</td>
</tr>
</tbody>
</table>

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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.
### DATA AGGREGATORS Where-external-routine-used List

<table>
<thead>
<tr>
<th>System</th>
<th>Module</th>
<th>Module Name</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>BLANKH</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>ANAVAL</td>
<td>CONVERT VALUE OF ATTRIBUTE TYPE</td>
</tr>
<tr>
<td>DELFIL</td>
<td>CDJO1</td>
<td>AGGREGATOR JOIN FUNCTION</td>
<td></td>
</tr>
<tr>
<td></td>
<td>CDN01</td>
<td>AGGREGATOR NOT IN SET FUNCTION</td>
<td></td>
</tr>
<tr>
<td>ERRPRO</td>
<td>CDJO1</td>
<td>AGGREGATOR JOIN FUNCTION</td>
<td></td>
</tr>
<tr>
<td></td>
<td>CDN01</td>
<td>AGGREGATOR NOT IN SET FUNCTION</td>
<td></td>
</tr>
<tr>
<td></td>
<td>CDU01</td>
<td>AGGREGATOR UNION FUNCTION</td>
<td></td>
</tr>
<tr>
<td></td>
<td>NISSORT</td>
<td>NOT-IN-SET SORT ROUTINE</td>
<td></td>
</tr>
</tbody>
</table>

### FOR$CLOSE

- **CRTCDR**: CREATE THE RELATIVE ACCESS FILE FOR REL.
- **FORCLS**: CLOSE ALL FILES USED BY THE AGGREGATORS
- **NISCLOS**: THIS PROCESS CLOSES THE NIS FILES
- **RDCDFR**: **** PURPOSE NOT FOUND BY STRIPPER ****
- **RDRSFL**: WRITE THE RELATIVE FILE TO JOIN RESULT FILE**

### FOR$INQUIRE

- **GET**: RETRIEVE CONTENTS OF ENTITY CLASS
- **GETATT**: RETRIEVE ATTRIBUTE INFORMATION
- **PUTATT**: DB AP USED TO INIT/CHANGE AN ATT VALUE
### DATA AGGREGATORS Where-external-routine-used List

<table>
<thead>
<tr>
<th>System Module</th>
<th>Module Name</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>SORT</td>
<td>SORTING A FILE</td>
</tr>
<tr>
<td></td>
<td>SRTATT</td>
<td>STORE THE SORTING CRITERIA FOR A SINGLE ATTRIBUTE **</td>
</tr>
</tbody>
</table>

**FOR$OPEN**

<table>
<thead>
<tr>
<th>Module</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>CRTCDR</td>
<td>CREATE THE RELATIVE ACCESS FILE FOR REL.</td>
</tr>
<tr>
<td>CRTHDR</td>
<td>CREATE A RELATIVE ADDRESS FILE (CDF)</td>
</tr>
<tr>
<td>NISOPEN</td>
<td>OPENS THE INPUT AND OUTPUT NIS FILES</td>
</tr>
<tr>
<td>RDCDFR</td>
<td>**** PURPOSE NOT FOUND BY STRIPPER ****</td>
</tr>
<tr>
<td>RDRSFL</td>
<td>WRITE THE RELATIVE FILE TO JOIN RESULT FILE**</td>
</tr>
</tbody>
</table>

**GENFIL**

- CDJ01 AGGREGATOR JOIN FUNCTION
- CDN01 AGGREGATOR NOT IN SET FUNCTION
- CDU01 AGGREGATOR UNION FUNCTION

**INITAL**

- CDJ01 AGGREGATOR JOIN FUNCTION
- CDN01 AGGREGATOR NOT IN SET FUNCTION
- CDU01 AGGREGATOR UNION FUNCTION

**LIB$INDEX**

- ANABOO VERIFY A BOOLEAN CONDITION
- ^NAREL DETERMINE VALIDITY OF RELATIONAL OPERATOR
DATA AGGREGATORS Where-external-routine-used List

<table>
<thead>
<tr>
<th>System</th>
<th>Module</th>
<th>Module Name</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>ANAVAL</td>
<td>CONVERT VALUE OF ATTRIBUTE TYPE</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CHGPTR</td>
<td>ADJUST COMMON DATA RECORD POINTER</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CHKRNQ</td>
<td>PERFORM ATTRIBUTE VALUE RANGE CHECKS</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CHREAL</td>
<td>CHARACTER TO REAL CONVERSIONS</td>
</tr>
<tr>
<td></td>
<td></td>
<td>GETCHK</td>
<td>CHECK INPUT PARAMETERS OF 'GET' FOR ERRORS</td>
</tr>
<tr>
<td></td>
<td></td>
<td>GETPTR</td>
<td>DETERMINE NEXT CURRENT RECORD POINTER</td>
</tr>
</tbody>
</table>

NSEND

| CDJ01  | AGGREGATOR JOIN FUNCTION |
| CDN01  | AGGREGATOR NOT IN SET FUNCTION |
| CDU01  | AGGREGATOR UNION FUNCTION |

RCV

| CDJ01  | AGGREGATOR JOIN FUNCTION |
| CDN01  | AGGREGATOR NOT IN SET FUNCTION |
| CDU01  | AGGREGATOR UNION FUNCTION |

RMATR

| ANAVAL | CONVERT VALUE OF ATTRIBUTE TYPE |

SIGERR

| CDJ01  | AGGREGATOR JOIN FUNCTION |
| CDN01  | AGGREGATOR NOT IN SET FUNCTION |
| CDU01  | AGGREGATOR UNION FUNCTION |
DATA AGGREGATORS Where-external-routine-used List

<table>
<thead>
<tr>
<th>System</th>
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<th>Purpose</th>
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<td>FILL KEY ARRAY USED BY THE VAX SORT ROUTINE**</td>
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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 than 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.
DATA AGGREGATORS Main Program Parts List

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DATA AGGREGATORS Main Program Parts List

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DATA AGGREGATORS Main Program Parts List

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Purpose—AGGREGATOR NOT IN SET FUNCTION

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DATA AGGREGATORS Main Program Parts List

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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 obtained
from the source code.

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.
DATA AGGREGATORS Module Documentation

NAME: ACTLEN
PURPOSE: DETERMINE LENGTH OF CHARACTER STRING
LANGUAGE: VAX-11 FORTRAN
MODULE TYPE: SUBROUTINE
SOURCE FILE: ACTLEN
SOURCE FILE TYPE: .FOR
HOST: SUBSYSTEM: CDM
SUBDIRECTORY: DOCUMENTATION GROUP: PS41320

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

THIS PRIMITIVE WILL BE USED TO DETERMINE THE LENGTH OF THE CHARACTER STRING PASSED TO IT

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

STRING = CHAR
LENGTH = I*4

CALLED DIRECTLY BY:
-------------------

CHKRNG    - PERFORM ATTRIBUTE VALUE RANGE CHECKS **
CONCAT    - CONCATENATE TWO STRINGS **

USED IN MAIN PROGRAM(S):
------------------------

CDJ01     - AGGREGATOR JOIN FUNCTION **
CONCAT    - CONCATENATE TWO STRINGS **
DATA AGGREGATORS Module Documentation

NAME: ADDCHN
PURPOSE: ADD ATTRIBUTE TO LINKED LIST
LANGUAGE: VAX-11 FORTRAN
MODULE TYPE: SUBROUTINE
SOURCE FILE: ADDCHN
SOURCE FILE TYPE: .FOR
HOST:
SUBSYSTEM: CDM
SUBDIRECTORY: DOCUMENTATION GROUP: PS41320
DESCRIPTION:

ARGUMENTS:

-------------
ATRADR = I*4
CDFLU = I*4

INCLUDE FILES:

-------------
ATTRINF.IN - **** PURPOSE NOT FOUND BY STRIPPER ****
HDRINFO.IN - **** PURPOSE NOT FOUND BY STRIPPER ****

COMMON BLOCKS:
IATT
CATT
IHD
CHD

ROUTINES CALLED:

-------------
WRTATT - WRITE ATTRIBUTE RECORD
WRTHDR - WRITE RECORD HEADER

CALLED DIRECTLY BY:

-------------
3-44
SRTATT - STORE THE SORTING CRITERIA FOR A SINGLE ATTRIBUTE

USED IN MAIN PROGRAM(S):

CDJ01 - AGGREGATOR JOIN FUNCTION
DATA AGGREGATORS Module Documentation

NAME: ANAATT
PURPOSE: DETERMINE LEGALITY OF ATTRIBUTE NAME
LANGUAGE: VAX-11 FORTRAN
MODULE TYPE: SUBROUTINE
SOURCE FILE: ANAATT
SOURCE FILE TYPE: .FOR
HOST:
SUBSYSTEM: CDM
SUBDIRECTORY: DOCUMENTATION GROUP: PS41320

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

ARGUMENTS:
-----------
SC = I*4
START = I*4
CDFLU = I*4
RC = I*4

INCLUDE FILES:
---------------
ATTRINF.IN - **** PURPOSE NOT FOUND BY STRIPPER ****
HDRINFO.IN - **** PURPOSE NOT FOUND BY STRIPPER ****

COMMON BLOCKS:
IATT
catt
IHD
CHD

ROUTINES CALLED:
------------------
GAINFO - STORE ATTRIBUTE INFORMATION IN COMMON BLOCK**
TOKEN

3-46
DATA AGGREGATORS Module Documentation

NAME: ANABOO
PURPOSE: VERIFY A BOOLEAN CONDITION
LANGUAGE: VAX-11 FORTRAN
MODULE TYPE: SUBROUTINE
SOURCE FILE: ANABOO
SOURCE FILE TYPE: .FOR
HOST: SUBSYSTEM: CDM
SUBDIRECTORY: DOCUMENTATION GROUP: PS41320

DESCRIPTION:

ARGUMENTS:

SC = CHAR
START = I*4
END = L*4
BOOL = CHAR
RC = I*4

ROUTINES CALLED:

LIB$INDEX
TOKEN
DATA AGGREGATORS Module Documentation

NAME: ANAREL
PURPOSE: DETERMINE VALIDITY OF RELATIONAL OPERATOR
LANGUAGE: VAX-11 FORTRAN
MODULE TYPE: SUBROUTINE
SOURCE FILE: ANAREL
SOURCE FILE TYPE: .FOR
HOST:
SUBSYSTEM: CDM
SUBDIRECTORY:
DOCUMENTATION GROUP: PS41320

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

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

SC = CHAR
START = I*4
RELOP = CHAR
RC = I*4

ROUTINES CALLED:
----------------
LIB$INDEX
TOKEN
DATA AGGREGATORS Module Documentation

NAME: ANAVAL
PURPOSE: CONVERT VALUE OF ATTRIBUTE TYPE
LANGUAGE: VAX-11 FORTRAN
MODULE TYPE: SUBROUTINE
SOURCE FILE: ANAVAL
SOURCE FILE TYPE: .FOR
HOST: SUBSYSTEM: CDM
SUBDIRECTORY: DOCUMENTATION GROUP: PS41320

DESCRIPTION:

ARGUMENTS:

SC = CHAR
START = I*4
VALUES = I*4 (1)
REALVAL = R*4 (1)
RC = I*4
CDFLU = I*4
ATTFLG = L*4

ROUTINES CALLED:

BLANKH
CHREAL - CHARACTER TO REAL CONVERSIONS **
CHRHOL - CONVERT CHAR STRING TO INTEGER ARRAY **
CHRINT - CHARACTER TO INTEGER CONVERSION **
GAINFO - STORE ATTRIBUTE INFORMATION IN COMMON BLOCK**
LIB$INDEX
RMAITR
TOKEN
NAME: CALCRL
PURPOSE: DETERMINE IN WORDS SIZE OF THE RECORD
LANGUAGE: VAX-11 FORTRAN
MODULE TYPE: SUBROUTINE
SOURCE FILE: CALCRL
SOURCE FILE TYPE: .FOR
HOST: SUBSYSTEM: CDM
SUBDIRECTORY: DOCUMENTATION GROUP: PS41320

DESCRIPTION:

ARGUMENTS:

RECL = I*4
RECSIZ = I*4

INCLUDE FILES:

MACHDEP.IN - **** PURPOSE NOT FOUND BY STRIPPER ****

COMMON BLOCKS:
BNFMDP

CALLED DIRECTLY BY:

CDJ01 - AGGREGATOR JOIN FUNCTION

USED IN MAIN PROGRAM(S):
CDJ01 - AGGREGATOR JOIN FUNCTION
DATA AGGREGATORS Module Documentation

NAME: CDJO1
PURPOSE: AGGREGATOR JOIN FUNCTION
LANGUAGE: VAX-11 COBOL
MODULE TYPE: PROGRAM
SOURCE FILE: CDJ01
SOURCE FILE TYPE: .COB
HOST:
SUBSYSTEM: CDM
SUBDIRECTORY:
DOCUMENTATION GROUP: PS41320

DESCRIPTION:

THE OBJECTIVE OF THIS CONFIGURATION ITEM IS TO PERFORM RELATION JOINS UPON INTERMEDIATE RESULTS OF A MULTI-DATABASE TRANSACTION. IT, ALONG WITH THE STAGER/SCHEDULER CI AND QUERY PROCESSORS, PERFORM THE RUN TIME EVALUATION OF COMMANDS PRESENTED TO THEM BY APPLICATION PROCESSES.

THE JOIN AGGREGATOR PERFORMS THE FOLLOWING:

1. IT RECEIVES AND UNPACKS A MESSAGE FROM THE NTM AND BUILDS APPROPRIATE TABLES AND FILES FOR THE TWO OPERAND RELATION AND RESULTANT RELATION.

2. IT SORTS THE OPERANDS WHICH ARE STORED IN FILES FOR THE JOIN.

3. IT READS THE OPERAND FILES, PERFORMS THE JOIN AND CREATES THE FILE WHICH WILL CONTAIN THE RESULTANT RELATION.

4. IT SENDS A COMPLETION MESSAGE TO THE STAGER/SCHEDULER WHICH CONTAINS PROGRAM STATUS AND THE NUMBER OF RECORDS IN THE RESULTANT RELATION.

3-51
INCLUDE FILES:

```
ERRCDM - IISS ERROR STATUS CODES FOR CDMP MODULES
CHKCDM - IISS CDMP CHECK STATUS CODES
APL    - JOIN QUERY ATTRIBUTE PAIR LIST
JQGTLB - JOIN QUERY GRAPH TELLS HOW TO CONNECT SUBTRANSACTIONS
RFTABLE - THE RESULT FIELD TABLE
AGGMSG - AGGREGATOR INPUT MESSAGE
STDRESP - WS DEFINITION FOR STANDARD STATUS VARIABLE
SRVRET - AS THE RETURN GIVEN A TABLE-FULL ERROR
ERRPRO - PROCESS ERROR INCLUDE FILE
```

ROUTINES CALLED:

```
GENVIL
INITAL
RCV
SIGERR
CRTHDR - CREATE A RELATIVE ADDRESS FILE (CDF) **
CRTCDFR - CREATE THE RELATIVE ACCESS FILE FOR REL. **
CALCRL - DETERMINE IN WORDS, SIZE OF THE RECORD **
CRTATTR - POPULATE ATTRIBUTE DATA ITEMS **
SORT    - SORTING A FILE **
SRTATT  - STORE THE SORTING CRITERIA FOR A SINGLE ATTRIBUTE
GETREL  - RETRIEVE THE NEXT RECORD FROM THE CDF FILE **
GET     - RETRIEVE CONTENTS OF ENTITY CLASS **
GETFLD  - RETRIEVE AN ATTRIBUTE FROM A RECORD **
STRMOV
PUTATT  - DB AP USED TO INIT/CHANGE AN ATT VALUE **
WRTCDFR - WRITE CURRENT RECORD **
UPDHDR  - UPDATE HEADER RECORD **
RDRSFL  - WRITE THE RELATIVE FILE TO JOIN RESULT FILE**
FORCLS  - CLOSE ALL FILES USED BY THE AGGREGATORS **
NSEND
DELFIL
TRMNST
ERRPRO
```
DATA AGGREGATORS Module Documentation

NAME: CDNO1
PURPOSE: AGGREGATOR NOT IN SET FUNCTION
LANGUAGE: VAX-11 COBOL
MODULE TYPE: PROGRAM
SOURCE FILE: CDNO1
SOURCE FILE TYPE: .COB
HOST:
SUBSYSTEM: CDM
SUBDIRECTORY: DOCUMENTATION GROUP: PS41320

DESCRIPTION:

THE OBJECTIVE OF THIS CONFIGURATION ITEM IS TO PERFORM RELATION NOT IN SETS UPON INTERMEDIATE RESULTS OF A MULTI-DATABASE TRANSACTION. IT, ALONG WITH THE DISTRIBUTED REQUEST SUPERVISOR CI AND REQUEST PROCESSORS, PERFORM THE RUN TIME EVALUATION OF COMMANDS PRESENTED TO THEM BY APPLICATION PROCESSES.

IBM NOTE

VAX SPECIFIC ITEMS WILL BE MARKED WITH AN IBM COMMENT TO DENOTE CHANGES THAT MUST BE MADE TO HOST THIS MODULE TO THE IBM

THE NOT IN SET AGGREGATOR PERFORMS THE FOLLOWING:

1. IT RECEIVES AND UNPACKS A MESSAGE FROM THE NTM AND BUILDS APPROPRIATE TABLES FOR THE TWO OPERAND RELATION AND RESULTANT RELATION.

2. IT PERFORMS A SORT/COMPARE OPERATION ON THE OPERAND RELATION CREATING THE RESULTANT RELATION.

3. IT SENDS A COMPLETION MESSAGE TO THE DISTRIBUTED REQUEST SUPERVISOR WHICH CONTAINS PROGRAM STATUS AND THE NUMBER OF RECORDS IN THE RESULTANT RELATION.

3-53
INCLUDE FILES:

- RFTABLE - THE RESULT FIELD TABLE
- RFTAB2 - THE RESULT FIELD TABLE
- APL - JOIN QUERY ATTRIBUTE PAIR LIST
- JQGTBL - JOIN QUERY GRAPH TELLS HOW TO CONNECT SUBTRANSACTIONS
- AGGMSG - AGGREGATOR INPUT MESSAGE
- STDRESP - WS DEFINITION FOR STANDARD STATUS VARIABLE
- CHKCDM - IISS CDMP CHECK STATUS CODES
- ERRCDM - IISS ERROR STATUS CODES FOR CDMP MODULES
- SRVRET - AS THE RETURN GIVEN A TABLE-FULL ERROR
- ERRPRO - PROCESS ERROR INCLUDE FILE

ROUTINES CALLED:

- NISSORT - NOT-IN-SET SORT ROUTINE
- NISOPEN - OPENS THE INPUT AND OUTPUT NIS FILES
- NISCMD - CONTROL THE COMPARISON OF THE NIS FIELDS
- NISREAD - READS THE NIS FILE AND CREATE CHAR BUFFER
- NISWRIT - TO WRITE THE NIS BUFFER TO RESULTS FILE
- NISCLOS - THIS PROCESS CLOSES THE NIS FILES
- NSEND
- DELFIL
- TRMNAT
- ERRPRO
DATA AGGREGATORS Module Documentation

NAME: CDU01
PURPOSE: AGGREGATOR UNION FUNCTION
LANGUAGE: VAX-11 COBOL
MODULE TYPE: PROGRAM
SOURCE FILE: CDU01
SOURCE FILE TYPE: .COB
HOST:
SUBSYSTEM: CDM
SUBDIRECTORY:
DOCUMENTATION GROUP: PS41320

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

THE OBJECTIVE OF THIS CONFIGURATION ITEM IS TO
PERFORM RELATION UNIONS UPON INTERMEDIATE RESULTS
OF A MULTI-DATABASE TRANSACTION. IT, ALONG WITH
THE STAGER/SCHEDULER CI AND QUERY PROCESSORS,
PERFORM THE RUN TIME EVALUATION OF COMMANDS PRESENTED
TO THEM BY APPLICATION PROCESSES.

THE UNION AGGREGATOR PERFORMS THE FOLLOWING:

1. IT RECEIVES AND UNPACKS A MESSAGE FROM THE NTM
AND BUILDS APPROPRIATE TABLES FOR THE
TWO OPERAND RELATION AND RESULTANT RELATION.

2. IT PERFORMS A SORT/MERGE OPERATION ON THE OPERAND
RELATION CREATING THE RESULTANT RELATION.

3. IT SENDS A COMPLETION MESSAGE TO THE DISTRIBUTED REQUEST
SUPERVISOR WHICH CONTAINS PROGRAM STATUS, THE RESULT
FILE NAME, AND A RECORD COUNT OF 1. THE DRS WILL COUNT
THE NUMBER OF RECORDS BASED ON THE NUMBER OF RECORDS IN
EACH INPUT FILE.

INCLUDE FILES:
---------------
RFTABLE - THE RESULT FIELD TABLE
AGGMSG - AGGREGATOR INPUT MESSAGE
STDRESP - WS DEFINITION FOR STANDARD STATUS VARIABLE
ERRCDM - IISS ERROR STATUS CODES FOR CDMP MODULES
CHKCDM - IISS CDMP CHECK STATUS CODES
SRVRET - AS THE RETURN GIVEN A TABLE-FULL ERROR
ERRPRO - PROCESS ERROR INCLUDE FILE

ROUTINES CALLED:
-----------------
INITAL
RCV
SIGERR
WHSTST
GENFIL
SOR$PASS_FILES
SOR$INIT_SORT
SOR$SORT_MERGE
SOR$END_SORT
NSEND
TRMNAT
ERRPRO
DATA AGGREGATORS Module Documentation

NAME:                       CHGPTR
PURPOSE:                    ADJUST COMMON DATA RECORD POINTER
LANGUAGE:                   VAX-11 FORTRAN
MODULE TYPE:                SUBROUTINE
SOURCE FILE:                CHGPTR
SOURCE FILE TYPE:           .FOR
HOST:                       
SUBSYSTEM:                  CDM
SUBDIRECTORY:               DOCUMENTATION GROUP: PS41320

DESCRIPTION:

ARGUMENTS:

POSPAR = CHAR
NEXTREC = I*4
RC = I*4

INCLUDE FILES:

HDRINFO.IN - **** PURPOSE NOT FOUND BY STRIPPER ****

COMMON BLOCKS:

IHD
CHD

Routines called:

LIB$INDEX

Called directly by:

GET - RETRIEVE CONTENTS OF ENTITY CLASS

3-57
USED IN MAIN PROGRAM(S):

CDJO1 - AGGREGATOR JOIN FUNCTION
DATA AGGREGATORS Module Documentation

NAME: CHKRNG
PURPOSE: PERFORM ATTRIBUTE VALUE RANGE CHECKS
LANGUAGE: VAX-11 FORTRAN
MODULE TYPE: SUBROUTINE
SOURCE FILE: CHKRNG
SOURCE FILE TYPE: .FOR
HOST:
SUBSYSTEM: CDM
SUBDIRECTORY:
DOCUMENTATION GROUP: PS41320

DESCRIPTION:

ARGUMENTS:

CHADR = CHAR
IADRES = I*4
RADRES = R*4
CONST = CHAR
HIVAL = CHAR
LOVAL = CHAR
LGTH = I*4
DTYPE = CHAR
RC = I*4

ROUTINES CALLED:

ACTLEN - DETERMINE LENGTH OF CHARACTER STRING **
CHREAL - CHARACTER TO REAL CONVERSIONS **
CHRINT - CHARACTER TO INTEGER CONVERSION **
LIB$INDEX

CALLED DIRECTLY BY:

PUTATT - DB AP USED TO INIT/CHANGE AN ATT VALUE **

USED IN MAIN PROGRAM(S):

3-59
CDJ01 - AGGREGATOR JOIN FUNCTION
DATA AGGREGATORS Module Documentation

NAME: CHREAL
PURPOSE: CHARACTER TO REAL CONVERSIONS
LANGUAGE: VAX-11 FORTRAN
MODULE TYPE: SUBROUTINE
SOURCE FILE: CHREAL
SOURCE FILE TYPE: .FOR
HOST:
SUBSYSTEM: CDM
SUBDIRECTORY: DOCUMENTATION
DOCUMENTATION GROUP: PS41320

DESCRIPTION:

ARGUMENTS:

STRING = CHAR
REALVA = R*4
RC = I*4

ROUTINES CALLED:

LIB$INDEX

CALLED DIRECTLY BY:

ANAVAL - CONVERT VALUE OF ATTRIBUTE TYPE
CHKRNG - PERFORM ATTRIBUTE VALUE RANGE CHECKS
GETITM - EXTRACT ATTRIBUTE VALUE FROM USER'S BUFFER

USED IN MAIN PROGRAM(S):

ANAVAL - CONVERT VALUE OF ATTRIBUTE TYPE
CDJ01 - AGGREGATOR JOIN FUNCTION
DATA AGGREGATORS Module Documentation

NAME: CHRHOL
PURPOSE: CONVERT CHAR STRING TO INTEGER ARRAY
LANGUAGE: VAX-11 FORTRAN
MODULE TYPE: SUBROUTINE
SOURCE FILE: CHRHOL
SOURCE FILE TYPE: .FOR
HOST: CDM
DOCUMENTATION GROUP: PS41320

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

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

STRING = CHAR
INTADD = I*4 (1)
RC = I*4

INCLUDE FILES:
----------------
MACHDEP.IN - **** PURPOSE NOT FOUND BY STRIPPER ****

COMMON BLOCKS:
BNFMDP

CALLED DIRECTLY BY:
---------------------
ANAVAL - CONVERT VALUE OF ATTRIBUTE TYPE
**

USED IN MAIN PROGRAM(S):
--------------------------
ANAVAL - CONVERT VALUE OF ATTRIBUTE TYPE
**

3-62
DATA AGGREGATORS Module Documentation

NAME: CHRINT
PURPOSE: CHARACTER TO INTEGER CONVERSION
LANGUAGE: VAX-11 FORTRAN
MODULE TYPE: SUBROUTINE
SOURCE FILE: CHRINT
SOURCE FILE TYPE: .FOR
HOST:
SUBSYSTEM: CDM
SUBDIRECTORY:
DOCUMENTATION GROUP: PS41320

DESCRIPTION:

ARGUMENTS:

STRING = CHAR
INTGR = I*4
RC = I*4

CALLED DIRECTLY BY:

ANAVAL - CONVERT VALUE OF ATTRIBUTE TYPE
CHKRNG - PERFORM ATTRIBUTE VALUE RANGE CHECKS
GETITM - EXTRACT ATTRIBUTE VALUE FROM USER'S BUFFER

USED IN MAIN PROGRAM(S):

ANAVAL - CONVERT VALUE OF ATTRIBUTE TYPE
CDJO1 - AGGREGATOR JOIN FUNCTION
DATA AGGREGATORS Module Documentation

NAME: CONCAT
PURPOSE: CONCATENATE TWO STRINGS
LANGUAGE: VAX-11 FORTRAN
MODULE TYPE: SUBROUTINE
SOURCE FILE: CONCAT
SOURCE FILE TYPE: .FOR
HOST:
SUBSYSTEM: CDM
SUBDIRECTORY: DOCUMENTATION
DOCUMENTATION GROUP: PS41320

DESCRIPTION:

-----------

ARGUMENTS:

---------

  STRING = CHAR
  ADDSTR = CHAR

ROUTINES CALLED:

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

  ACTLEN - DETERMINE LENGTH OF CHARACTER STRING  **
DATA AGGREGATORS Module Documentation

NAME: CONDIG
PURPOSE: CONVERTS SIGN OF SIGNED VALUE TO DIGIT VAL
LANGUAGE: VAX-11 FORTRAN
MODULE TYPE: SUBROUTINE
SOURCE FILE: CONDIG
SOURCE FILE TYPE:.FOR
HOST:
SUBSYSTEM: CDM
SUBDIRECTORY:
DOCUMENTATION GROUP: PS41320

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

ARGUMENTS:
--------

SSIGN = CHAR
SIGN = I*4
DIGIT = I*4
ERROR = I*4

CALLED DIRECTLY BY:
------------------

CRTBUF - CREATE CHAR. STRING FOR FIELD COMPARISON **

USED IN MAIN PROGRAM(S):
---------------------

CDN01 - AGGREGATOR NOT IN SET FUNCTION
DATA AGGREGATORS Module Documentation

NAME: CRTATR
PURPOSE: POPULATE ATTRIBUTE DATA ITEMS
LANGUAGE: VAX-11 FORTRAN
MODULE TYPE: SUBROUTINE
SOURCE FILE: CRTATR
SOURCE FILE TYPE: .FOR
HOST: 
SUBSYSTEM: CDM
SUBDIRECTORY: DOCUMENTATION
DOCUMENTATION GROUP: PS41320

DESCRIPTION:

ARGUMENTS:

TYPE = CHAR
ATTR = CHAR
RECNO = I*4
BCHAR = I*4
LCHAR = I*4
SIZE = I*4
NODEC = I*4
CDFLU = I*4
STATUS = I*4

INCLUDE FILES:

ATTRINF.IN  **** PURPOSE NOT FOUND BY STRIPPER ****

COMMON BLOCKS:
   IATT
   CATT

ROUTINES CALLED:

WRTATT  WRITE ATTRIBUTE RECORD
CALLED DIRECTLY BY:

CDJO1 - AGGREGATOR JOIN FUNCTION

USED IN MAIN PROGRAM(S):

CDJO1 - AGGREGATOR JOIN FUNCTION
DATA AGGREGATORS Module Documentation

NAME: CRTBUF
PURPOSE: CREATE CHAR. STRING FOR FIELD COMPARISON
LANGUAGE: VAX-11 FORTRAN
MODULE TYPE: SUBROUTINE
SOURCE FILE: CRTBUF
SOURCE FILE TYPE: .FOR
HOST:
SUBSYSTEM: CDM
SUBDIRECTORY: DOCUMENTATION
DOCUMENTATION GROUP: PS41320

DESCRIPTION:

ARGUMENTS:

BUFFER = CHAR
STPOS = I*4
FLDLEN = I*4
NCOMP = I*4
SCOMP = R*4
ERROR = I*4
FLDBUF = CHAR
SIGN = I*4
FLDTYP = CHAR
FIELD = I*4
MODIG = I*4
MODCHK = CHAR

ROUTINES CALLED:

CONDIG - CONVERTS SIGN OF SIGNED VALUE TO DIGIT VAL **
NISINT - CONVERTS A STRING NUMBER TO AN INTERGER **
NISREL - CONVERTS CHAR STRING TO REAL VAL W/NO DIGIT**

CALLED DIRECTLY BY:

NISCMD - CONTROL THE COMPARISON OF THE NIS FIELDS **
USED IN MAIN PROGRAM(S):

CDN01 - AGGREGATOR NOT IN SET FUNCTION
DATA AGGREGATORS Module Documentation

NAME: CRTCDR
PURPOSE: CREATE THE RELATIVE ACCESS FILE FOR REL.
LANGUAGE: VAX-11 FORTRAN
MODULE TYPE: SUBROUTINE
SOURCE FILE: CRTCDR
SOURCE FILE TYPE: .FOR
HOST:
SUBSYSTEM: CDM
SUBDIRECTORY: DOCUMENTATION GROUP: PS41320

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

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

RELFIL = CHAR
ENTITY = CHAR
CDFLU = I*4
RELLU = I*4
ATRLTH = I*4
RECNO = I*4
STATUS = I*4

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

HDRINFO.IN - ***** PURPOSE NOT FOUND BY STRIPPER *****

COMMON BLOCKS:
IHD
CHD

ROUTINES CALLED:
------------------

FOR$CLOSE
FOR$OPEN
UPDHDR - UPDATE HEADER RECORD
WRTCDDR - WRITE CURRENT RECORD

3-70
CALLED DIRECTLY BY:
---------------------
  CDJO1 - AGGREGATOR JOIN FUNCTION

USED IN MAIN PROGRAM(S):
------------------------
  CDJO1 - AGGREGATOR JOIN FUNCTION
DATA AGGREGATORS Module Documentation

NAME: CRTHDR
PURPOSE: CREATE A RELATIVE ADDRESS FILE (CDF)
LANGUAGE: VAX-11 FORTRAN
MODULE TYPE: SUBROUTINE
SOURCE FILE: CRTHDR
SOURCE FILE TYPE: .FOR
HOST: SUBSYSTEM: CDM
SUBDIRECTORY:
DOCUMENTATION GROUP: PS41320

DESCRIPTION:

ARGUMENTS:

FILNME = CHAR
ENTITY = CHAR
RECLTH = I*4
ATRLTH = I*4
NOATTR = I*4
CDFLU = I*4
STATUS = I*4

INCLUDE FILES:

HDRINFO.IN - **** PURPOSE NOT FOUND BY STRIPPER ****

COMMON BLOCKS:

IHD
CHD

ROUTINES CALLED:

FOR$OPEN
WRTHDR - WRITE RECORD HEADER

3-72
CALLED DIRECTLY BY:

CDJ01 - AGGREGATOR JOIN FUNCTION

USED IN MAIN PROGRAM(S):

CDJ01 - AGGREGATOR JOIN FUNCTION
DATA AGGREGATORS Module Documentation

NAME: FORCLS
PURPOSE: CLOSE ALL FILES USED BY THE AGGREGATORS
LANGUAGE: VAX-11 FORTRAN
MODULE TYPE: SUBROUTINE
SOURCE FILE: FORCLS
SOURCE FILE TYPE: .FOR
HOST:
SUBSYSTEM: CDM
SUBDIRECTORY:
DOCUMENTATION GROUP: PS41320

DESCRIPTION:

ARGUMENTS:

CDFLU1 = I*4
CDFLU2 = I*4
CDFLU3 = I*4
STATUS = I*4

ROUTINES CALLED:

FOR$CLOSE

CALLED DIRECTLY BY:

CDJO1 - AGGREGATOR JOIN FUNCTION

USED IN MAIN PROGRAM(S):

CDJO1 - AGGREGATOR JOIN FUNCTION
DATA AGGREGATORS Module Documentation

NAME: GACHK
PURPOSE: CHECK INPUT PARAMETERS OF 'GETATT' CALL
LANGUAGE: VAX-11 FORTRAN
MODULE TYPE: SUBROUTINE
SOURCE FILE: GACHK
SOURCE FILE TYPE: .FOR
HOST:
SUBSYSTEM: CDM
SUBDIRECTORY: DOCUMENTATION GROUP: PS41320

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

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

ENTITY = I*4
CDFLU = I*4
ATTI = I*4
LASATT = I*4
ATTR = I*4
RC = I*4
CHADRS = CHAR

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

ATTRINF.IN - **** PURPOSE NOT FOUND BY STRIPPER ****

COMMON BLOCKS:

IATT
CATT

ROUTINES CALLED:
-----------------

GAINFO - STORE ATTRIBUTE INFORMATION IN COMMON BLOCK*

CALLED DIRECTLY BY:

3-75
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1 November 1985

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

GETATT - RETRIEVE ATTRIBUTE INFORMATION

**

USED IN MAIN PROGRAM(S):

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

CDJO1 - AGGREGATOR JOIN FUNCTION

3-76
DATA AGGREGATORS Module Documentation

NAME: GAINFO
PURPOSE: STORE ATTRIBUTE INFORMATION IN COMMON BLOCK
LANGUAGE: VAX-11 FORTRAN
MODULE TYPE: SUBROUTINE
SOURCE FILE: GAINFO
SOURCE FILE TYPE: .FOR
HOST: SUBSYSTEM: CDM
SUBDIRECTORY: DOCUMENTATION GROUP: PS41320

DESCRIPTION:

ARGUMENTS:

ATTI = I*4
LASATT = I*4
CDFLU = I*4
ATTR = CHAR
RC = I*4
RECADR = I*4

INCLUDE FILES:

ATTRINF.IN - **** PURPOSE NOT FOUND BY STRIPPER ****

COMMON BLOCKS:
IATT
CATT

CALLED DIRECTLY BY:

ANAATT - DETERMINE LEGALITY OF ATTRIBUTE NAME **
ANAVAL - CONVERT VALUE OF ATTRIBUTE TYPE **
GACHK - CHECK INPUT PARAMETERS OF 'GETATT' CALL **
PACHK - CHECK THE PARAMETERS OF THE PUTATT CALL **
SACHK  - SORTING THE ATTRIBUTE RECORDS

USED IN MAIN PROGRAM(S):
-------------------------
ANAATT  - DETERMINE LEGALITY OF ATTRIBUTE NAME
ANAVAL  - CONVERT VALUE OF ATTRIBUTE TYPE
CDJO1   - AGGREGATOR JOIN FUNCTION
DATA AGGREGATORS Module Documentation

NAME: GET
PURPOSE: RETRIEVE CONTENTS OF ENTITY CLASS
LANGUAGE: VAX-11 FORTRAN
MODULE TYPE: SUBROUTINE
SOURCE FILE: GET
SOURCE FILE TYPE: .FOR
HOST: CDM
SUBDIRECTORY: DOCUMENTATION
DOCUMENTATION GROUP: PS41320

DESCRIPTION:

ARGUMENTS:

ENTITY = CHAR
POSPAR = CHAR
CDFLU = I*4
BUFFER = CHAR
RC = I*4

INCLUDE FILES:

HDRINFO.IN - **** PURPOSE NOT FOUND BY STRIPPER ****

COMMON BLOCKS:

IHD
CHD

ROUTINES CALLED:

CHGPTR - ADJUST COMMON DATA RECORD POINTER
FOR$INQUIRE
GETCHK - CHECK INPUT PARAMETERS OF 'GET' FOR ERRORS
GETPTR - DETERMINE NEXT CURRENT RECORD POINTER
RDCDR - RETURN THE CONTENTS OF A COMMON DATA RECORD
RDHDR - READ HEADER RECORD TO DETERMINE PROCESSING
WRTHDR  - WRITE RECORD HEADER

CALLED DIRECTLY BY:

CDJO1        - AGGREGATOR JOIN FUNCTION
GETREL       - RETRIEVE THE NEXT RECORD FROM THE CDF FILE

USED IN MAIN PROGRAM(S):

CDJO1        - AGGREGATOR JOIN FUNCTION
DATA AGGREGATORS Module Documentation

NAME: GETATT
PURPOSE: RETRIEVE ATTRIBUTE INFORMATION
LANGUAGE: VAX-11 FORTRAN
MODULE TYPE: SUBROUTINE
SOURCE FILE: GETATT
SOURCE FILE TYPE: .FOR
HOST:
SUBSYSTEM: CDM
SUBDIRECTORY: DOCUMENTATION
DOCUMENTATION GROUP: PS41320

DESCRIPTION: 

ARGUMENTS:

ENTITY = CHAR
ATTR = CHAR
CDFLU = I*4
BUFFER = CHAR
CHADR = CHAR
IADRES = I*4
RADRES = I*4
TYPE = CHAR
SIZE = I*4
DECMAL = I*4
RC = I*4

INCLUDE FILES:

HDRINFO.IN - ***** PURPOSE NOT FOUND BY STRIPPER *****
ATTRINF.IN - ***** PURPOSE NOT FOUND BY STRIPPER *****

COMMON BLOCKS:

IMD
CHD
IATT
CATT

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ROUTINES CALLED:
-------------------
FOR$INQUIRE
GACHK    - CHECK INPUT PARAMETERS OF 'GETATT' CALL  **
GETITM   - EXTRACT ATTRIBUTE VALUE FROM USER'S BUFFER  **
RDHDR    - READ HEADER RECORD TO DETERMINE PROCESSING  **

CALLED DIRECTLY BY:
-------------------
GETFLD   - RETRIEVE AN ATTRIBUTE FROM A RECORD  **

USED IN MAIN PROGRAM(S):
------------------------
CDJ01    - AGGREGATOR JOIN FUNCTION
MICROCOPY RESOLUTION TEST CHART
DATA AGGREGATORS Module Documentation

NAME: GETCHK
PURPOSE: CHECK INPUT PARAMETERS OF 'GET' FOR ERRORS
LANGUAGE: VAX-11 FORTRAN
MODULE TYPE: SUBROUTINE
SOURCE FILE: GETCHK
SOURCE FILE TYPE: .FOR
HOST: SUBSYSTEM: CDM
SUBDIRECTORY: DOCUMENTATION GROUP: PS41320

DESCRIPTION:

ARGUMENTS:

CDFLU = I*4
POSPAR = CHAR
BUFFER = CHAR
RC = I*4

INCLUDE FILES:

HDRINFO.IN - **** PURPOSE NOT FOUND BY STRIPPER ****

COMMON BLOCKS:
IHD
CHD

ROUTINES CALLED:

LIB$INDEX

CALLED DIRECTLY BY:

GET - RETRIEVE CONTENTS OF ENTITY CLASS
USED IN MAIN PROGRAM(S):

CDJO1 - AGGREGATOR JOIN FUNCTION
DATA AGGREGATORS Module Documentation

NAME: GETFLD
PURPOSE: RETRIEVE AN ATTRIBUTE FROM A RECORD
LANGUAGE: VAX-11 FORTRAN
MODULE TYPE: SUBROUTINE
SOURCE FILE: GETFLD
SOURCE FILE TYPE: .FOR
HOST:
SUBSYSTEM: CDM
SUBDIRECTORY:
DOCUMENTATION GROUP: PS41320

DESCRIPTION:

ARGUMENTS:

ENTITY = CHAR
ATTR = CHAR
BUFFER = CHAR
CADRES = CHAR
TYPE = CHAR
CDFLU = I*4
IADRES = I*4
RADRES = R*4
SIZE = I*4
NODEC = I*4
STATUS = I*4

ROUTINES CALLED:

GETATT - RETRIEVE ATTRIBUTE INFORMATION  **

CALLED DIRECTLY BY:

CDJ01 - AGGREGATOR JOIN FUNCTION

USED IN MAIN PROGRAM(S):

3-85
CDJ01 - AGGREGATOR JOIN FUNCTION
DATA AGGREGATORS Module Documentation

NAME: GETITM
PURPOSE: EXTRACT ATTRIBUTE VALUE FROM USER'S BUFFER

LANGUAGE: VAX-11 FORTRAN

MODULE TYPE: SUBROUTINE

SOURCE FILE: GETITM

SOURCE FILE TYPE: .FOR

HOST: CDM

DESCRIPTION:

ARGUMENTS:

BUFFER = CHAR
BC = I*4
LC = I*4
TYPE = CHAR
SIZE = I*4
DECDIG = I*4
CHADRS = CHAR
IADRS = I*4
RADRES = R*4
RC = I*4

ROUTINES CALLED:

CHREAL - CHARACTER TO REAL CONVERSIONS
CHRINT - CHARACTER TO INTEGER CONVERSION

CALLED DIRECTLY BY:

GETATT - RETRIEVE ATTRIBUTE INFORMATION

USED IN MAIN PROGRAM(S):

3-87
CDJ01 - AGGREGATOR JOIN FUNCTION
DATA AGGREGATORS Module Documentation

NAME: GETPTR
PURPOSE: DETERMINE NEXT CURRENT RECORD POINTER
LANGUAGE: VAX-11 FORTRAN
MODULE TYPE: SUBROUTINE
SOURCE FILE: GETPTR
SOURCE FILE TYPE: .FOR
HOST:
SUBSYSTEM: CDM
SUBDIRECTORY: DOCUMENTATION
DOCUMENTATION GROUP: PS41320

DESCRIPTION:

ARGUMENTS:

RECI = I*4
CURREC = I*4
NEXTREC = I*4
LASREC = I*4
POSPAR = CHAR
RC = I*4

ROUTINES CALLED:

LIB$INDEX

CALLED DIRECTLY BY:

GET - RETRIEVE CONTENTS OF ENTITY CLASS

USED IN MAIN PROGRAM(S):

CDJ01 - AGGREGATOR JOIN FUNCTION
DATA AGGREGATORS Module Documentation

NAME: GETREL
PURPOSE: RETRIEVE THE NEXT RECORD FROM THE CDF FILE
LANGUAGE: VAX-11 FORTRAN
MODULE TYPE: SUBROUTINE
SOURCE FILE: GETREL
SOURCE FILE TYPE: .FOR
HOST: SUBSYSTEM: CDM
SUBDIRECTORY: DOCUMENTATION GROUP: PS41320

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

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

ENTITY = CHAR
BUFFER = CHAR
CDFLU = I*4
STATUS = I*4

ROUTINES CALLED:
-----------------

GET - RETRIEVE CONTENTS OF ENTITY CLASS

CALLED DIRECTLY BY:
---------------------

CDJO1 - AGGREGATOR JOIN FUNCTION

USED IN MAIN PROGRAM(S):
-------------------------

CDJO1 - AGGREGATOR JOIN FUNCTION
DATA AGGREGATORS Module Documentation

NAME: HOLCHR
PURPOSE: CONVERT DATA FROM HOLLERITH TO CHARACTER
LANGUAGE: VAX-11 FORTRAN
MODULE TYPE: SUBROUTINE
SOURCE FILE: HOLCHR
SOURCE FILE TYPE: .FOR
HOST: SUBSYSTEM: CDM
SUBDIRECTORY: DOCUMENTATION GROUP: PS41320

DESCRIPTION: 

ARGUMENTS:

--------
INTADD = I*4 (1)
STRING = CHAR
RC = I*4

INCLUDE FILES:

--------
MACHDEP.IN - ***** PURPOSE NOT FOUND BY STRIPPER *****

COMMON BLOCKS:

BNFMDP

DATA AGGREGATORS Module Documentation

NAME: INTCHR
PURPOSE: CONVERT INTEGER VALUE TO CHARACTER STRING
LANGUAGE: VAX-11 FORTRAN
MODULE TYPE: SUBROUTINE
SOURCE FILE: INTCHR
SOURCE FILE TYPE: .FOR
HOST: SUBSYSTEM: CDM
SUBDIRECTORY: DOCUMENTATION GROUP: PS41320

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

ARGUMENTS:
--------------
INTGR = I*4
SIZE = I*4
STRING = CHAR
RC = I*4

CALLED DIRECTLY BY:
---------------------
PUTITM - CONVERTS VAL SUPPLIED AND STORES IN BUFFER **

USED IN MAIN PROGRAM(S):
--------------------------
CDJO1 - AGGREGATOR JOIN FUNCTION

3-92
DATA AGGREGATORS Module Documentation

NAME:         INTSRT
PURPOSE:      FILL KEY ARRAY USED BY THE VAX SORT ROUTINE
LANGUAGE:     VAX-11 FORTRAN
MODULE TYPE:  SUBROUTINE
SOURCE FILE:  INTSRT
SOURCE FILE TYPE: .FOR
HOST:         CDM
SUBSYSTEM:    SOR
SUBDIRECTORY:  DOCUMENTATION
DOCUMENTATION GROUP: PS41320

DESCRIPTION:

ARGUMENTS:

CDFLU - I*4
RC - I*4
KEYBUF - I*2 (41)
TOTKEY - I*2

INCLUDE FILES:

HDRINFO.IN - ***** PURPOSE NOT FOUND BY STRIPPER *****
ATTRINF.IN - ***** PURPOSE NOT FOUND BY STRIPPER *****

COMMON BLOCKS:

IMD
CHD
IATT
CATT

ROUTINES CALLED:

SOR$INIT_SORT
WRTATT - WRITE ATTRIBUTE RECORD

3-93
CALLED DIRECTLY BY:

- SORT - SORTING A FILE

USED IN MAIN PROGRAM(S):

- CDJO1 - AGGREGATOR JOIN FUNCTION
DATA AGGREGATORS Module Documentation

NAME: NISCLOS
PURPOSE: THIS PROCESS CLOSES THE NIS FILES
LANGUAGE: VAX-11 FORTRAN
MODULE TYPE: SUBROUTINE
SOURCE FILE: NISCLOS
HOST LANGUAGE: FOR
SUBSYSTEM: CDM
SUBDIRECTORY: DOCUMENTATION GROUP: PS41320

DESCRIPTION:

ARGUMENTS:

FILNAM = CHAR
UNITNO = I*4
FILSTS = CHAR
CLSERR = I*4

ROUTINES CALLED:

FOR$CLOSE

CALLED DIRECTLY BY:

CDN01 - AGGREGATOR NOT IN SET FUNCTION

USED IN MAIN PROGRAM(S):

CDN01 - AGGREGATOR NOT IN SET FUNCTION
DATA AGGREGATORS Module Documentation

NAME: NISCMD
PURPOSE: CONTROL THE COMPARISON OF THE NIS FIELDS
LANGUAGE: VAX-11 FORTRAN
MODULE TYPE: SUBROUTINE
SOURCE FILE: NISCMD
SOURCE FILE TYPE: .FOR
HOST: CDM
SUBSYSTEM: SUBDIRECTORY: DOCUMENTATION GROUP: PS41320

DESCRIPTION:

ARGUMENTS:

F1BUF = CHAR
F2BUF = CHAR
NISCON = I*4
POS1 = I*4
LG1 = I*4
TYPE1 = CHAR
NODIG1 = I*4
ATTR1 = I*4
POS2 = I*4
LG2 = I*4
TYPE2 = CHAR
NODIG2 = I*4
ATTR2 = I*4
F1ERR = I*4
F2ERR = I*4
INDEX = I*4
CHECK = CHAR

ROUTINES CALLED:

CRTBUF - CREATE CHAR. STRING FOR FIELD COMPARISON **
NISINT - CONVERTS A STRING NUMBER TO AN INTERGER **
NISREL - CONVERTS CHAR STRING TO REAL VAL W/NO DIGIT**
DATA AGGREGATORS Module Documentation

NAME: NISINT
PURPOSE: CONVERTS A STRING NUMBER TO AN INTERGER
LANGUAGE: VAX-11 FORTRAN
MODULE TYPE: SUBROUTINE
SOURCE FILE: NISINT
SOURCE FILE TYPE: .FOR
HOST:
SUBSYSTEM: CDM
SUBDIRECTORY: DOCUMENTATION
DOCUMENTATION GROUP: PS41320

DESCRIPTION:

ARGUMENTS:

STRING = CHAR
INTGR = I*4
RC = I*4
ILEN = I*4

CALLED DIRECTLY BY:

CRTCBUF - CREATE CHAR. STRING FOR FIELD COMPARISON **
NISCMD - CONTROL THE COMPARISON OF THE NIS FIELDS **

USED IN MAIN PROGRAM(S):

CDN01 - AGGREGATOR NOT IN SET FUNCTION
DATA AGGREGATORS Module Documentation

NAME: NISOPEN

PURPOSE: OPENS THE INPUT AND OUTPUT NIS FILES

LANGUAGE: VAX-11 FORTRAN

MODULE TYPE: SUBROUTINE

SOURCE FILE: NISOPEN

SOURCE FILE TYPE: .FOR

HOST: CDM

DESCRIPTION: PS41320

ARGUMENTS:

FILNAM = CHAR
UNITNO = I*4
FILSTS = CHAR
RECLEN = I*4
OPERR = I*4

ROUTINES CALLED:

FOR$OPEN

CALLED DIRECTLY BY:

CDNO1 - AGGREGATOR NOT IN SET FUNCTION

USED IN MAIN PROGRAM(S):

CDNO1 - AGGREGATOR NOT IN SET FUNCTION
DATA AGGREGATORS Module Documentation

NAME: NISREAD
PURPOSE: READS THE NIS FILE AND CREATE CHAR
BUFFER
LANGUAGE: VAX-11 FORTRAN
MODULE TYPE: SUBROUTINE
SOURCE FILE: NISREAD
SOURCE FILE TYPE: .FOR
HOST:
SUBSYSTEM: CDM
SUBDIRECTORY:
DOCUMENTATION GROUP: PS41320

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

ARGUMENTS:
--------
BUFFER = CHAR
UNITNO = I*4
RDERR = I*4
RECSIZE = I*4
FILEOF = I*4

CALLED DIRECTLY BY:
---------------------
CDN01 - AGGREGATOR NOT IN SET FUNCTION

USED IN MAIN PROGRAM(S):
-------------------------
CDN01 - AGGREGATOR NOT IN SET FUNCTION
DATA AGGREGATORS Module Documentation

NAME:                      NISREL
PURPOSE:                  CONVERTS CHAR STRING TO REAL VAL W/NO
                          DIGIT
LANGUAGE:                 VAX-11 FORTRAN
MODULE TYPE:              SUBROUTINE
SOURCE FILE:              NISREL
SOURCE FILE TYPE:         .FOR
HOST:                     
SUBSYSTEM:                CDM
SUBDIRECTORY:             
DOCUMENTATION GROUP: PS41320

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

ARGUMENTS:
--------------
STRING = CHAR
REALVA = R*4
ILEN = I*4
NODIG = I*4
RC = I*4

CALLED DIRECTLY BY:
--------------------
CRTBUF       - CREATE CHAR. STRING FOR FIELD COMPARISON    **
NISCMD       - CONTROL THE COMPARISON OF THE NIS FIELDS    **

USED IN MAIN PROGRAM(S):
------------------------
CDNO1        - AGGREGATOR NOT IN SET FUNCTION

3-101
DATA AGGREGATORS Module Documentation

NAME: NISSORT
PURPOSE: NOT-IN-SET SORT ROUTINE
LANGUAGE: VAX-11 COBOL
MODULE TYPE: SUBROUTINE
SOURCE FILE: NISSORT
SOURCE FILE TYPE: .COB
HOST:
SUBSYSTEM: CDM
SUBDIRECTORY:
DOCUMENTATION GROUP: PS41320

DESCRIPTION:

THE OBJECTIVE OF THIS CONFIGURATION ITEM IS TO SORT THE INPUT FILE THAT MEETS THE QUALIFICATIONS OF THE RECORD "INPUT-FILE".

REVISED 15 APR 1985
MODIFIED 2 MAY 1985
MODIFIED 9 MAY 1985

ARGUMENTS:

INPUT-FILE = RECRD
TEMP-FILE-NAME = DSPLY [X(30)]
MESG-DESC = DSPLY [X(60)]
RET-STATUS = DSPLY [X(5)]

INCLUDE FILES:

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

ROUTINES CALLED:

SOR$PASS_FILES
SOR$INIT_SORT
SOR$SORT_MERGE
SOR$END_SORT
ERRPRO

 CALLED DIRECTLY BY:

---------------------
CDNO1  - AGGREGATOR NOT IN SET FUNCTION

USED IN MAIN PROGRAM(S):

---------------------
CDNO1  - AGGREGATOR NOT IN SET FUNCTION
DATA AGGREGATORS Module Documentation

NAME: NISWRT
PURPOSE: TO WRITE THE NIS BUFFER TO RESULTS FILE
LANGUAGE: VAX-11 FORTRAN
MODULE TYPE: SUBROUTINE
SOURCE FILE: NISWRT
SOURCE FILE TYPE: .FOR
HOST: SUBSYSTEM: CDM
SUBDIRECTORY: DOCUMENTATION GROUP: PS41320

DESCRIPTION:

ARGUMENTS:

UNITNO = I*4
BUFFER = CHAR
WRTERR = I*4
RECSIZ = I*4

CALLED DIRECTLY BY:

CDNO1 - AGGREGATOR NOT IN SET FUNCTION

USED IN MAIN PROGRAM(S):

CDNO1 - AGGREGATOR NOT IN SET FUNCTION
DATA AGGREGATORS Module Documentation

NAME: PACHK
PURPOSE: CHECK THE PARAMETERS OF THE PUTATT CALL
LANGUAGE: VAX-11 FORTRAN
MODULE TYPE: SUBROUTINE
SOURCE FILE: PACHK
SOURCE FILE TYPE: .FOR
HOST: SUBSYSTEM: CDM
SUBDIRECTORY: DOCUMENTATION GROUP: PS41320

DESCRIPTION: 

ARGUMENTS:

ENTITY = CHAR
CDFLU = I*4
ATTI = I*4
LASATT = I*4
ATTR = CHAR
RC = I*4
CHADR = CHAR

INCLUDE FILES:

ATTRINF.IN - **** PURPOSE NOT FOUND BY STRIPPER ****

COMMON BLOCKS:
IATT
CATT

ROUTINES CALLED:

GAINFO - STORE ATTRIBUTE INFORMATION IN COMMON BLOCK**

CALLED DIRECTLY BY:

3-105
PS 620141320
1 November 1985

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PUTATT - DB AP USED TO INIT/CHANGE AN ATT VALUE

USED IN MAIN PROGRAM(S):

CDJ01 - AGGREGATOR JOIN FUNCTION

3-106
DATA AGGREGATORS Module Documentation

NAME: PUTATT
PURPOSE: DB AP USED TO INIT/CHANGE AN ATT VALUE
LANGUAGE: VAX-11 FORTRAN
MODULE TYPE: SUBROUTINE
SOURCE FILE: PUTATT
SOURCE FILE TYPE: .FOR
HOST:
SUBSYSTEM: CDM
SUBDIRECTORY:
DOCUMENTATION GROUP: PS41320

DESCRIPTION:

ARGUMENTS:

ENTITY = CHAR
ATTR = CHAR
CDFLU = I*4
CHADR = CHAR
IADRES = I*4
RADRES = R*4
BUFFER = CHAR
RC = I*4

INCLUDE FILES:

HDRINFO.IN - **** PURPOSE NOT FOUND BY STRIPPER ****
ATTRINF.IN - **** PURPOSE NOT FOUND BY STRIPPER ****

COMMON BLOCKS:
IHD
CHD
IATT
CATT

ROUTINES CALLED:

3-107
CHKRNG - PERFORM ATTRIBUTE VALUE RANGE CHECKS **
FOR\$INQUIRE
PACHK - CHECK THE PARAMETERS OF THE PUTATT CALL **
PUTITM - CONVERTS VAL SUPPLIED AND STORES IN BUFFER **
RDHDR - READ HEADER RECORD TO DETERMINE PROCESSING **

CALLED DIRECTLY BY:
------------------------
CDJO1 - AGGREGATOR JOIN FUNCTION

USED IN MAIN PROGRAM(S):
------------------------
CDJO1 - AGGREGATOR JOIN FUNCTION
DATA AGGREGATORS Module Documentation

NAME: PUTITM
PURPOSE: CONVERTS VAL SUPPLIED AND STORES IN BUFFER
LANGUAGE: VAX-11 FORTRAN
MODULE TYPE: SUBROUTINE
SOURCE FILE: PUTITM
SOURCE FILE TYPE: .FOR
HOST: SUBSYSTEM: CDM
SUBDIRECTORY: DOCUMENTATION GROUP: PS41320
DESCRIPTION:

ARGUMENTS:

CHADRS = CHAR
IADRS = I*4
RADRS = R*4
BC = I*4
LC = I*4
TYPE = CHAR
SIZE = I*4
DECDIG = I*4
BUFFER = CHAR
RC = I*4

ROUTINES CALLED:

INTCHR - CONVERT INTEGER VALUE TO CHARACTER STRING **
REALCH - CONVERT REAL NUMBER TO CHARACTER STRING **

CALLED DIRECTLY BY:

PUTATT - DB AP USED TO INIT/CHANGE AN ATT VALUE **

USED IN MAIN PROGRAM(S):

3-109
CDJO1  - AGGREGATOR JOIN FUNCTION
DATA AGGREGATORS Module Documentation

NAME: RDCDFR
PURPOSE: **** PURPOSE NOT FOUND BY STRIPPER ****
LANGUAGE: VAX-11 FORTRAN
MODULE TYPE: SUBROUTINE
SOURCE FILE: RDCDFR
SOURCE FILE TYPE: .FOR
HOST: 
SUBSYSTEM: CDM
SUBDIRECTORY: DOCUMENTATION
DOCUMENTATION GROUP: PS41320

DESCRIPTION: 

ARGUMENTS:

RESNAME = CHAR
ENTITY = CHAR
CDFLU = I*4
RELLU = I*4
RECCNT = I*4
STATUS = I*4

INCLUDE FILES:

HDRINFO.IN - **** PURPOSE NOT FOUND BY STRIPPER ****

COMMON BLOCKS:

IHD
CHD

ROUTINES CALLED:

FOR$CLOSE
FOR$OPEN
RDCDR - RETURN THE CONTENTS OF A COMMON DATA RECORD**
RDHDR - READ HEADER RECORD TO DETERMINE PROCESSING **
WRTREL - WRITE A RECORD TO THE RESULT FILE **
DATA AGGREGATORS Module Documentation

NAME: RDCDR
PURPOSE: RETURN THE CONTENTS OF A COMMON DATA RECORD

LANGUAGE: VAX-11 FORTRAN

MODULE TYPE: SUBROUTINE
SOURCE FILE: RDCDR
SOURCE FILE TYPE: .FOR

HOST: SUBSYSTEM: CDM
SUBDIRECTORY: DOCUMENTATION GROUP: PS41320

DESCRIPTION:

ARGUMENTS:

----------

CDFLU = I*4
NEXTREC = I*4
RECSIZ = I*4
BUFFER = CHAR
UPDFLG = CHAR
DELFLG = L*4

CALLED DIRECTLY BY:

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

GET - RETRIEVE CONTENTS OF ENTITY CLASS **
RDCDFR - **** PURPOSE NOT FOUND BY STRIPPER ****
RDRSFL - WRITE THE RELATIVE FILE TO JOIN RESULT FILE**
SRTCDDR - SORTING THE COMMON DATA RECORD **

USED IN MAIN PROGRAM(S):

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CDJ01 - AGGREGATOR JOIN FUNCTION
RDCDFR - **** PURPOSE NOT FOUND BY STRIPPER ****

3-112
DATA AGGREGATORS Module Documentation

NAME:            RDHDR
PURPOSE:         READ HEADER RECORD TO DETERMINE
                 PROCESSING
LANGUAGE:        VAX-11 FORTRAN
MODULE TYPE:     SUBROUTINE
SOURCE FILE:     RDHDR
SOURCE FILE TYPE: .FOR
HOST:
SUBSYSTEM:       CDM
SUBDIRECTORY:
DOCUMENTATION GROUP: PS41320

DESCRIPTION:

ARGUMENTS:

CDFLU = I*4
ENTITY = CHAR
RC = I*4

INCLUDE FILES:

HDRINFO.IN - ***** PURPOSE NOT FOUND BY STRIPPER *****

COMMON BLOCKS:

IHD
CHD

CALLED DIRECTLY BY:

GET - RETRIEVE CONTENTS OF ENTITY CLASS **
GETATT - RETRIEVE ATTRIBUTE INFORMATION **
PUTATT - DB AP USED TO INIT/CHANGE AN ATT VALUE **
RDCDFR - ***** PURPOSE NOT FOUND BY STRIPPER *****
RDRSFL - WRITE THE RELATIVE FILE TO JOIN RESULT FILE**
SORT - SORTING A FILE **
SRTATT - STORE THE SORTING CRITERIA FOR A SINGLE **

3-113
PS 620141320
1 November 1985

ATTRIBUTE

UPDHDR  - UPDATE HEADER RECORD

USED IN MAIN PROGRAM(S):

CDJ01  - AGGREGATOR JOIN FUNCTION
RDCDFR  - **** PURPOSE NOT FOUND BY STRIPPER ****
DATA AGGREGATORS Module Documentation

NAME: RDRSFL
PURPOSE: WRITE THE RELATIVE FILE TO JOIN RESULT FILE
LANGUAGE: VAX-11 FORTRAN
MODULE TYPE: SUBROUTINE
SOURCE FILE: RDRSFL
SOURCE FILE TYPE: .FOR
HOST: SUBSYSTEM: CDM
SUBDIRECTORY: DOCUMENTATION GROUP: PS41320

DESCRIPTION:

ARGUMENTS:

RESNAME = CHAR
ENTITY = CHAR
CDFLU = I*4
RELLU = I*4
RECCNT = I*4
STATUS = I*4

INCLUDE FILES:

HDRINFO.IN - **** PURPOSE NOT FOUND BY STRIPPER ****

COMMON BLOCKS:
IHD
CHD

ROUTINES CALLED:

FOR$CLOSE
FOR$OPEN
RDCDR - RETURN THE CONTENTS OF A COMMON DATA RECORD**
RDHDR - READ HEADER RECORD TO DETERMINE PROCESSING **
WRTREL - WRITE A RECORD TO THE RESULT FILE

CALLED DIRECTLY BY:

CDJ01 - AGGREGATOR JOIN FUNCTION

USED IN MAIN PROGRAM(S):

CDJ01 - AGGREGATOR JOIN FUNCTION
DATA AGGREGATORS Module Documentation

NAME: REALCH
PURPOSE: CONVERT REAL NUMBER TO CHARACTER STRING
LANGUAGE: VAX-11 FORTRAN
MODULE TYPE: SUBROUTINE
SOURCE FILE: REALCH
SOURCE FILE TYPE: .FOR
HOST: SUBSYSTEM: CDM
SUBDIRECTORY: DOCUMENTATION GROUP: PS41320

DESCRIPTION:

ARGUMENTS:

REALNO = R*4
TOTDIG = I*4
DECDIG = I*4
STRING = CHAR
RC = I*4

CALLED DIRECTLY BY:

PUTITM - CONVERTS VAL SUPPLIED AND STORES IN BUFFER **

USED IN MAIN PROGRAM(S):

CDJ01 - AGGREGATOR JOIN FUNCTION
DATA AGGREGATORS Module Documentation

NAME: RELFTN
PURPOSE: CONVERT REAL NUMBER TO CHARACTER STRING
LANGUAGE: VAX-11 FORTRAN
MODULE TYPE: SUBROUTINE
SOURCE FILE: RELFTN
SOURCE FILE TYPE: .FOR
HOST: SUBSYSTEM: CDM
SUBDIRECTORY: DOCUMENTATION GROUP: PS41320

DESCRIPTION:

ARGUMENTS:

ARGUMENTS:

DECIMAL = I*4
REALIN = R*8
CHAROT = CHAR
DATA AGGREGATORS Module Documentation

NAME: RETCDR
PURPOSE: SORTING AND WRITE RECORD
LANGUAGE: VAX-11 FORTRAN
MODULE TYPE: SUBROUTINE
SOURCE FILE: RETCDR
SOURCE FILE TYPE: .FOR
HOST: SUBSYSTEM: CDM

DESCRIPTION:

ARGUMENTS:

CDFLU = I*4
RECREL = I*4
TOTKEY = I*2
RC = I*4

INCLUDE FILES:

HDRINFO.IN - **** PURPOSE NOT FOUND BY STRIPPER ****

COMMON BLOCKS:

IHD
CHD

ROUTINES CALLED:

SOR$RETURN_REC
WRTCDR - WRITE CURRENT RECORD

CALLED DIRECTLY BY:

SORT - SORTING A FILE
USED IN MAIN PROGRAM(S):

CDJO1 - AGGREGATOR JOIN FUNCTION
DATA AGGREGATORS Module Documentation

NAME: SACHK
PURPOSE: SORTING THE ATTRIBUTE RECORDS
LANGUAGE: VAX-11 FORTRAN
MODULE TYPE: SUBROUTINE
SOURCE FILE: SACHK
SOURCE FILE TYPE: .FOR
HOST: SUBSYSTEM: CDM
SUBDIRECTORY: DOCUMENTATION GROUP: PS41320

DESCRIPTION:

ARGUMENTS:

ENTITY = CHAR
ATTR  = CHAR
CDFLU = I*4
ORDER = CHAR
RC   = I*4
RECADR = I*4

INCLUDE FILES:

HDRINFO.IN - ***** PURPOSE NOT FOUND BY STRIPPER *****
ATTRINF.IN - ***** PURPOSE NOT FOUND BY STRIPPER *****

COMMON BLOCKS:
IHD
CHD
IATT
CATT

ROUTINES CALLED:

GAINFO    - STORE ATTRIBUTE INFORMATION IN COMMON BLOCK**
WRTATT    - WRITE ATTRIBUTE RECORD**
CALLED DIRECTLY BY:

SRTATT - STORE THE SORTING CRITERIA FOR A SINGLE ATTRIBUTE

USED IN MAIN PROGRAM(S):

CDJO1 - AGGREGATOR JOIN FUNCTION
DATA AGGREGATORS Module Documentation

NAME: SORT
PURPOSE: SORTING A FILE
LANGUAGE: VAX-11 FORTRAN
MODULE TYPE: SUBROUTINE
SOURCE FILE: SORT
SOURCE FILE TYPE: .FOR
HOST: 
SUBSYSTEM: CDM
SUBDIRECTORY: 
DOCUMENTATION GROUP: PS41320

DESCRIPTION:

ARGUMENTS:

ENTITY = CHAR
CDFLU = I*4
RC = I*4

INCLUDE FILES:

HDRINFO.IN - **** PURPOSE NOT FOUND BY STRIPPER ****

COMMON BLOCKS:
IHD
CHD

ROUTINES CALLED:

FOR$INQUIRE
INTSRT - FILL KEY ARRAY USED BY THE VAX SORT ROUTINE**
RDHDR - READ HEADER RECORD TO DETERMINE PROCESSING **
RETCDR - SORTING AND WRITE RECORD **
SRTCDR - SORTING THE COMMON DATA RECORD **
TRMSRT - TERMINATE THE SORTING **

3-123
CALLED DIRECTLY BY:

CDJO1 - AGGREGATOR JOIN FUNCTION

USED IN MAIN PROGRAM(S):

CDJO1 - AGGREGATOR JOIN FUNCTION
DATA AGGREGATORS Module Documentation

NAME: SRTATT
PURPOSE: STORE THE SORTING CRITERIA FOR A SINGLE ATTRIBUTE

LANGUAGE: VAX-11 FORTRAN
MODULAR TYPE: SUBROUTINE
SOURCE FILE: SRTATT
SOURCE FILE TYPE: .FOR
HOST: SUBSYSTEM: CDM
SUBDIRECTORY: DOCUMENTATION GROUP: PS41320

DESCRIPTION:

ARGUMENTS:

ENTITY = CHAR
ATTR = CHAR
CDFLU = I*4
ORDER = CHAR
RC = I*4

INCLUDE FILES:

HDRINFO.IN - ***** PURPOSE NOT FOUND BY STRIPPER *****

COMMON BLOCKS:
IHD
CHD

ROUTINES CALLED:

ADDCHN - ADD ATTRIBUTE TO LINKED LIST **
FORSINQUIRE
RDHDR - READ HEADER RECORD TO DETERMINE PROCESSING **
SACHK - SORTING THE ATTRIBUTE RECORDS **
CALLED DIRECTLY BY:
              ------------
          CDJ01    - AGGREGATOR JOIN FUNCTION

USED IN MAIN PROGRAM(S):
              ------------
          CDJ01    - AGGREGATOR JOIN FUNCTION
DATA AGGREGATORS Module Documentation

NAME: SRTCDR
PURPOSE: SORTING THE COMMON DATA RECORD
LANGUAGE: VAX-11 FORTRAN
MODULE TYPE: SUBROUTINE
SOURCE FILE: SRTCDR
SOURCE FILE TYPE: .FOR
HOST: SUBSYSTEM: CDM
SUBDIRECTORY: DOCUMENTATION GROUP: PS41320

DESCRIPTION:

ARGUMENTS:

CFLU = I*4
KEYBUF = I*2 (41)
TOTKEY = I*2
RECI = I*4
LASREC = I*4
NUMREC = I*4
RECSIZ = I*4
RECREL = I*4
RC = I*4

ROUTINES CALLED:

RDCDR - RETURN THE CONTENTS OF A COMMON DATA RECORD**
SOR$RELEASE_REC
SOR$SORT_MERGE

CALLED DIRECTLY BY:

SORT - SORTING A FILE **

USED IN MAIN PROGRAM(S):

3-127
CDJO1  - AGGREGATOR JOIN FUNCTION
DATA AGGREGATORS Module Documentation

NAME: TRMSRT
PURPOSE: TERMINATE THE SORTING
LANGUAGE: VAX-11 FORTRAN
MODULE TYPE: SUBROUTINE
SOURCE FILE: TRMSRT
SOURCE FILE TYPE: .FOR
HOST: SUBSYSTEM: CDM
SUBDIRECTORY: DOCUMENTATION GROUP: PS41320

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

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

CDFLU = I*4
RC = I*4

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

HDRINFO.IN - **** PURPOSE NOT FOUND BY STRIPPER ****

COMMON BLOCKS:

IMD
CHD

ROUTINES CALLED:
---------------------

SOR$END_SORT
WRTHDR - WRITE RECORD HEADER

CALLED DIRECTLY BY:
---------------------

SORT - SORTING A FILE

3-129
USED IN MAIN PROGRAM(S):

CDJ01 - AGGREGATOR JOIN FUNCTION
DATA AGGREGATORS Module Documentation

NAME: UPDHDR
PURPOSE: UPDATE HEADER RECORD
LANGUAGE: VAX-11 FORTRAN
MODULE TYPE: SUBROUTINE
SOURCE FILE: UPDHDR
SOURCE FILE TYPE: .FOR
HOST:
SUBSYSTEM: CDM
SUBDIRECTORY: DOCUMENTATION GROUP: PS41320

DESCRIPTION:

ARGUMENTS:

ENTITY = CHAR
CDFLU = I*4
RECNO = I*4
RECCNT = I*4
STATUS = I*4

INCLUDE FILES:

HDRINFO.IN - **** PURPOSE NOT FOUND BY STRIPPER ****

COMMON BLOCKS:

IHD
CHD

ROUTINES CALLED:

RDHDR - READ HEADER RECORD TO DETERMINE PROCESSING **
WRTHDR - WRITE RECORD HEADER **

CALLED DIRECTLY BY:

3-131
CDJ01 - AGGREGATOR JOIN FUNCTION
CRTCDDR - CREATE THE RELATIVE ACCESS FILE FOR REL. **

USED IN MAIN PROGRAM(S):

CDJ01 - AGGREGATOR JOIN FUNCTION
DATA AGGREGATORS Module Documentation

NAME: WRTATT
PURPOSE: WRITE ATTRIBUTE RECORD
LANGUAGE: VAX-11 FORTRAN
MODULE TYPE: SUBROUTINE
SOURCE FILE: WRTATT
SOURCE FILE TYPE: .FOR
HOST:
SUBSYSTEM: CDM
SUBDIRECTORY: DOCUMENTATION GROUP: PS41320

DESCRIPTION:

ARGUMENTS:

CDFLU = I*4
RECADR = I*4

INCLUDE FILES:

ATTRINF.IN - **** PURPOSE NOT FOUND BY STRIPPER ****

COMMON BLOCKS:

IATT
CATT

CALLED DIRECTLY BY:

ADDCHN - ADD ATTRIBUTE TO LINKED LIST **
CRTATR - POPULATE ATTRIBUTE DATA ITEMS **
INTSRT - FILL KEY ARRAY USED BY THE VAX SORT ROUTINE**
SACHK - SORTING THE ATTRIBUTE RECORDS **

USED IN MAIN PROGRAM(S):

CDJO1 - AGGREGATOR JOIN FUNCTION

3-133
DATA AGGREGATORS Module Documentation

NAME: WRTCDR
PURPOSE: WRITE CURRENT RECORD
LANGUAGE: VAX-11 FORTRAN
MODULE TYPE: SUBROUTINE
SOURCE FILE: WRTCDR
SOURCE FILE TYPL: .FOR
HOST: SUBSYSTEM: CDM
SUBDIRECTORY: DOCUMENTATION GROUP: PS41320
DESCRIPTION: 

ARGUMENTS:

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<th>TYPE</th>
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<tr>
<td>RECSIZ</td>
<td>I*4</td>
</tr>
<tr>
<td>BUFF</td>
<td>CHAR</td>
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<tr>
<td>UPDFLG</td>
<td>CHAR</td>
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CALLED DIRECTLY BY:

<table>
<thead>
<tr>
<th>CALLER</th>
<th>DESCRIPTION</th>
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<tr>
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<td>AGGREGATOR JOIN FUNCTION</td>
</tr>
<tr>
<td>CRTCDR</td>
<td>CREATE THE RELATIVE ACCESS FILE FOR REL.</td>
</tr>
<tr>
<td>RETCDR</td>
<td>SORTING AND WRITE RECORD</td>
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USED IN MAIN PROGRAM(S):

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<th>PROGRAM</th>
<th>DESCRIPTION</th>
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<tbody>
<tr>
<td>CDJ01</td>
<td>AGGREGATOR JOIN FUNCTION</td>
</tr>
</tbody>
</table>
DATA AGGREGATORS Module Documentation

NAME: WRTHDR
PURPOSE: WRITE RECORD HEADER
LANGUAGE: VAX-11 FORTRAN
MODULE TYPE: SUBROUTINE
SOURCE FILE: WRTHDR
SOURCE FILE TYPE: .FOR
HOST: SUBSYSTEM: CDM
SUBDIRECTORY: DOCUMENTATION GROUP: PS41320

DESCRIPTION:

ARGUMENTS:
----------------
CDFLU = I*4

INCLUDE FILES:
----------------
HDRINFO.IN - **** PURPOSE NOT FOUND BY STRIPPER ****

COMMON BLOCKS:
IHD
CHD

CALLED DIRECTLY BY:
---------------------
ADDCHN - ADD ATTRIBUTE TO LINKED LIST
CRTHDR - CREATE A RELATIVE ADDRESS FILE (CDF)
GET - RETRIEVE CONTENTS OF ENTITY CLASS
TRMSRT - TERMINATE THE SORTING
UPDHDR - UPDATE HEADER RECORD

USED IN MAIN PROGRAM(S):
-------------------------
CDJ01 - AGGREGATOR JOIN FUNCTION

3-135
DATA AGGREGATORS Module Documentation

NAME: WRTREL
PURPOSE: WRITE A RECORD TO THE RESULT FILE
LANGUAGE: VAX-11 FORTRAN
MODULE TYPE: SUBROUTINE
SOURCE FILE: WRTREL
SOURCE FILE TYPE: .FOR
HOST: 
SUBSYSTEM: CDM
SUBDIRECTORY: 
DOCUMENTATION GROUP: PS41320

DESCRIPTION:

ARGUMENTS:

       RELLU = I*4
       BUFFER = CHAR
       RECSIZ = I*4
       RC = I*4

CALLED DIRECTLY BY:

       RDCDFR  - **** PURPOSE NOT FOUND BY STRIPPER ****
       RDRSFL  - WRITE THE RELATIVE FILE TO JOIN RESULT FILE**

USED IN MAIN PROGRAM(S):

       CDJ01  - AGGREGATOR JOIN FUNCTION
       RDCDFR  - **** PURPOSE NOT FOUND BY STRIPPER ****
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.
DATA AGGREGATORS Include File Description

FILE NAME: AGGMSG
PURPOSE: AGGREGATOR INPUT MESSAGE
LANGUAGE: VAX-11 COBOL

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

CONTAINS THE FORMAT OF THE INPUT MESSAGE FOR THE CDMP AGGREGATORS

DESCRIPTION :

AGGREGATOR INPUT MESSAGE FORMAT

NIS = NOT IN SET
DATA AGGREGATORS Include File Description

FILE NAME: APL
PURPOSE: JOIN QUERY ATTRIBUTE PAIR LIST
LANGUAGE: VAX-11 COBOL

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

CONTAINS INFORMATION ABOUT THE JOIN ATTRIBUTES FOR NDML SUBTRANSACTIONS
DATA AGGREGATORS Include File Description

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

DESCRIPTION:

---------
CONTAINS ALL STATUS CODES FOR THE
CDMP MODULES
DATA AGGREGATORS 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

---------
DATA AGGREGATORS Include File Description

FILE NAME: ERRPRO
PURPOSE: PROCESS ERROR INCLUDE FILE
LANGUAGE: VAX-11 COBOL

DESCRIPTION:

-------------
DATA AGGREGATORS Include File Description

FILE NAME: JQGTBL
PURPOSE: JOIN QUERY GRAPH TELLS HOW TO CONNECT SUBTRANSACTIONS
LANGUAGE: VAX-11 COBOL
DESCRIPTION:
DATA AGGREGATORS Include File Description

FILE NAME: RFTAB2
PURPOSE: THE RESULT FIELD TABLE
LANGUAGE: VAX-11 COBOL

DESCRIPTION:

-----------

CONTAINS CONCEPTUAL SCHEMA INFORMATION ABOUT
THE RESULTS OF AN NDML REQUEST
DATA AGGREGATORS Include File Description

FILE NAME: RFTABLE
PURPOSE: THE RESULT FIELD TABLE
LANGUAGE: VAX-11 COBOL

DESCRIPTION:

CONTAINS CONCEPTUAL SCHEMA INFORMATION ABOUT THE RESULTS OF AN NDML REQUEST

THE RESULT FIELD TABLE

WHEN CHANGING THE STRUCTURE OF THIS TABLE BE SURE TO CHANGE THE LAYOUT IN THE LINKAGE SECTION OF THE DRS (CDSO1) WHICH WAS COPIED FROM THIS.
DATA AGGREGATORS Include File Description

FILE NAME: SRVRET
PURPOSE: AS THE RETURN GIVEN A TABLE-FULL ERROR
LANGUAGE: VAX-11 COBOL

DESCRIPTION:

MODIFIED 11/2/83 TO INCLUDE RET-CODE-5
MODIFIED 1/9/84 TO INCREASE ALL ERROR CODES TO PIC X(5)
   AND TO ELIMINATE ALPHA’S
MODIFIED 1/26/84 TO ADD RET-CODE FOR GETUSR-NOT-SUCC
   SRV-SUCCESSFUL ADDED FOR GENERIC RETURN
MODIFIED 2/7/84 TO ADD ERROR CODES FOR ENTRY-NOT-FOUND
MODIFIED 2/8/84 TO ADD WTHST-NOT-SUCCESSFUL
MODIFIED 2/20/84 TO ADD TSTMOD NEW CODES.
   MODIFIED 20 AUG 84 INITIALIZE ALL LOCAL VARIABLES TO
   SPACES OR 0.
MODIFIED 5/21/85 TO ADD RCL AND FILGEN RETURN CODES
DATA AGGREGATORS Include File Description

FILE NAME: STDRESP
PURPOSE: WS DEFINITION FOR STANDARD STATUS VARIABLE
LANGUAGE: VAX-11 COBOL

DESCRIPTION:

THE STANDARD 'PROCESS COMPLETE' MESSAGE
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 620141320
1 November 1985

+-----+
| CDJO1 |
+-----+

+-----+ +-----+ +-----+ +-----+ +-----+ +-----+ +-----+ +-----+
|      | |      | |      | |      | |      | |      |

| (CONT) | | CRTCDR | | CALCRL | | CRTATR | | SORT | | (CONT) | |
+-------+ +-------+ +-------+ +-------+ +-------+ +-------+ +-------+

|      | |      | |      | |      | |      |

|       |

+-----+ +-----+ +-----+ +-----+ +-----+ +-----+ +-----+ +-----+
|      | |      | |      | |      | |      |

| WRTATT |
+------+

3-155
<table>
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<tr>
<th>FOR$INQUIRE</th>
<th>INTSRT</th>
<th>RDHDR</th>
<th>RETCDR</th>
<th>SRTCDR</th>
<th>TRMSRT</th>
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PS 620141320
1 November 1985

13

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PS 620141320
1 November 1985

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+-------+
| INTSRT |
+-------+

+-------+
| SOR$INIT_SORT |
+-------+

+-------+
| WRTATT |
+-------+
PS 620141320
1 November 1985

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+-------+
| RETCDR |
+-------+

+-----------------+
| SOR$RETURN_REC |
+-----------------+  +-------+
| WRTCDR         |
+-----------------+  +-------+
PS 620141320
1 November 1985

+---------+           +---------+
| TRMSRT  |           | SORSEND | WRTHDR |
|         |           |         |        |

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PS 620141320
1 November 1985

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---

<table>
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| CHGPTR | FOR$INQUIRE | GETCHK | GETPTR | (CONT) | --28+
|--------|-------------|--------|--------|--------|--------

---

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<tr>
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<th>LIB$INDEX</th>
<th>LIB$INDEX</th>
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3-169
MISSORT

(SOR$PASS FILES) (SOR$INIT SORT) (SOR$SORT MERGE) (CONT)

3-172
<table>
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<td>NISWRIT</td>
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<tr>
<td>ANABOO</td>
<td>NSEND</td>
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3.11 Program Listings Comments

This information is contained in the Module Descriptions in section 3.10.
SECTION 4
QUALITY ASSURANCE PROVISIONS

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."