This Documentation, which includes embedded help systems and electronically distributed materials, (hereinafter referred to as the “Documentation”) is for your informational purposes only and is subject to change or withdrawal by CA at any time. This Documentation is proprietary information of CA and may not be copied, transferred, reproduced, disclosed, modified or duplicated, in whole or in part, without the prior written consent of CA.

If you are a licensed user of the software product(s) addressed in the Documentation, you may print or otherwise make available a reasonable number of copies of the Documentation for internal use by you and your employees in connection with that software, provided that all CA copyright notices and legends are affixed to each reproduced copy.

The right to print or otherwise make available copies of the Documentation is limited to the period during which the applicable license for such software remains in full force and effect. Should the license terminate for any reason, it is your responsibility to certify in writing to CA that all copies and partial copies of the Documentation have been returned to CA or destroyed.

TO THE EXTENT PERMITTED BY APPLICABLE LAW, CA PROVIDES THIS DOCUMENTATION “AS IS” WITHOUT WARRANTY OF ANY KIND, INCLUDING WITHOUT LIMITATION, ANY IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR NONINFRINGEMENT. IN NO EVENT WILL CA BE LIABLE TO YOU OR ANY THIRD PARTY FOR ANY LOSS OR DAMAGE, DIRECT OR INDIRECT, FROM THE USE OF THIS DOCUMENTATION, INCLUDING WITHOUT LIMITATION, LOST PROFITS, LOST INVESTMENT, BUSINESS INTERRUPTION, GOODWILL, OR LOST DATA, EVEN IF CA IS EXPRESSLY ADVISED IN ADVANCE OF THE POSSIBILITY OF SUCH LOSS OR DAMAGE.

The use of any software product referenced in the Documentation is governed by the applicable license agreement and such license agreement is not modified in any way by the terms of this notice.

The manufacturer of this Documentation is CA.

Provided with “Restricted Rights.” Use, duplication or disclosure by the United States Government is subject to the restrictions set forth in FAR Sections 12.212, 52.227-14, and 52.227-19(c)(1) - (2) and DFARS Section 252.227-7014(b)(3), as applicable, or their successors.

Copyright © 2014 CA. All rights reserved. All trademarks, trade names, service marks, and logos referenced herein belong to their respective companies.
CA Technologies Product References

This document references the following CA Technologies products:

- CA File Master™ Plus for IMS
- CA Librarian®
- CA Panvalet®

Contact CA Technologies

Contact CA Support

For your convenience, CA Technologies provides one site where you can access the information that you need for your Home Office, Small Business, and Enterprise CA Technologies products. At http://ca.com/support, you can access the following resources:

- Online and telephone contact information for technical assistance and customer services
- Information about user communities and forums
- Product and documentation downloads
- CA Support policies and guidelines
- Other helpful resources appropriate for your product

Providing Feedback About Product Documentation

If you have comments or questions about CA Technologies product documentation, you can send a message to techpubs@ca.com.

To provide feedback about CA Technologies product documentation, complete our short customer survey which is available on the CA Support website at http://ca.com/docs.
Documentation Changes

The following documentation updates have been made since the last release of this documentation:

- Several descriptions of Change Log parameters and screens were updated to document an enhancement that allows the user to define the Change Log name.

- Several of the Primary Cyls and Secondary Cyls field descriptions were updated to document an increase in the upper limit of the valid values. The new valid values are between 0 and 9999999.

- Several sections changed to describe support for concatenated PDSs
Contents

Chapter 1: Introduction ............................. 9
  Functional Description ................................................................. 9
  General Product Features ............................................................ 10
  IMS Database Types Supported .................................................. 10
  Audience ......................................................................................... 11
  Notation Conventions ................................................................... 11
    Command Notation ........................................................................ 11

Chapter 2: Using CA File Master Plus for IMS ............................. 13
  Getting Help .................................................................................... 13
  Screen Fields .................................................................................. 14
  Layouts ............................................................................................ 14
    Record Layouts ................................................................................ 14
    Segment Layout Cross Reference .................................................... 15
    Custom Record Layouts .................................................................. 15
  Filters ................................................................................................ 16
  Execution Modes ........................................................................... 16
  Wildcard Selection ......................................................................... 16
    Select a DSN to Resolve a Wildcarded DSN ..................................... 17
    Select Wildcard Member from a PDS Directory ................................. 18
  Confirm Member Deletion .................................................................. 19
  Override Print Output Control ......................................................... 19

Chapter 3: Using the Main Menu ................................................. 23
  Main Menu ....................................................................................... 23
  Setup ................................................................................................. 24
  Browse and Edit .............................................................................. 24
  Utilities ............................................................................................. 24
  Print .................................................................................................. 24
  Filter ................................................................................................. 25
  Layouts .............................................................................................. 25
  DSN List ........................................................................................... 26

Chapter 4: Setting Environmental Parameters for Processing .............. 27
  How to Set Up Processing Parameters .............................................. 27
Define Processing Defaults and Jobcard Parameters..........................................................28
Define Print Output Control Parameters ........................................................................30
Define and Update Processing Parameters ......................................................................32
Define Segment Layout Cross-Reference Members ......................................................34
IMS Environments ........................................................................................................36

Chapter 5: Browsing an IMS Database 49
Browse IMS Databases ..................................................................................................50
Select PCBs ......................................................................................................................56
Update DSNs .....................................................................................................................57
Select a Secondary Index Database View ........................................................................59
Browse Primary and Line Commands ............................................................................62

Chapter 6: Editing IMS Databases 63
Edit IMS Databases ........................................................................................................64
Save Data when the Change Log Function is Active......................................................71
Select PCBs ......................................................................................................................75
Update DSNs .....................................................................................................................77
Select a Secondary Index Database View ........................................................................78
Edit Commands ...............................................................................................................82
Primary Commands .........................................................................................................82
Rules for Finding Packed Strings on the FIND Command ..............................................104
Line Commands ...............................................................................................................104
Data Display in Formatted Modes ..................................................................................114
Locate Fields when Editing in Formatted Mode ..........................................................117
Display Segments with No Layout in Formatted Mode ..............................................118

Chapter 7: Using Utility Functions 119
Select Utilities ..................................................................................................................119
Extract an IMS Database .................................................................................................120
Reload an IMS Database .................................................................................................130
Initialize an IMS Database .............................................................................................137
Display the DBCHART .....................................................................................................138
SOURCE Utility ...............................................................................................................139
Generate Extract File Layouts .........................................................................................143

Chapter 8: Printing Data from the IMS Database 149
Print IMS Database .........................................................................................................150

6 ISPF User Guide
CA File Master Plus for IMS is a full function z/OS data management product that provides enhanced capabilities for IBM's IMS database management system in both an online Interactive System Productivity Facility (ISPF) interface and through batch commands.

CA File Master Plus for IMS provides a set of powerful and easy-to-use tools for manipulating IMS databases. Many of the functions support specified segment filter/selection criteria and allow data to be displayed and modified using COBOL or PL1 layouts.

This section contains the following topics:
- Functional Description (see page 9)
- General Product Features (see page 10)
- IMS Database Types Supported (see page 10)
- Audience (see page 11)
- Notation Conventions (see page 11)

**Functional Description**

CA File Master Plus for IMS contains online and batch database management functions. The online functions include:

- IMS database browsing and editing
- A robust set of IMS database utility functions, including extracting and reloading
- Printing of IMS database contents
- Definition and support of segment filter/selection criteria
- Definition and support of record layouts from COBOL or PL/I layouts and record reformatting control parameters
- Viewing and modification of IMS segments using record layout formats defined by COBOL or PL1 layouts.
- Source code generation from a Database Description (DBD), Program Specification Block (PSB), or MDA load module
- Display of an IMS database's hierarchy in tree chart format

For batch file and data management functions, see the Batch Reference Guide.
General Product Features

The following features are available for all screens in the online interface:

■ Wildcard DSNs with subsequent DSN selection screen
■ Wildcard specification of member name with a subsequent screen of member name directory from which to select
■ Specification of Data Set Group/List names in DSN fields
■ Member name directory sorting by any column heading
■ Fully qualified or relative GDG data set names

Extensive screen-level and field-level Help that is designed to provide all the assistance you need to perform any screen function without the use of a manual.

IMS Database Types Supported

CA File Master Plus for IMS is an IMS database management and data manipulation tool that facilitates database editing and data creation. It supports the following IMS database types:

■ DEDB (Fast Path)
■ HDAM
■ HIDAM
■ HISAM
■ HSAM
■ MSDB (Fast Path)
■ PHDAM
■ PHIDAM
■ PSINDEX
■ SHISAM
■ SHSAM
■ Logical Database
■ Secondary Index
Audience

This guide is for programmers, database administrators, system programmers, or other technical persons who are responsible for managing or manipulating data when working with IMS applications in the mainframe testing and production environments. The reader is expected to be familiar with the z/OS ISPF and batch environments and with basic IMS terminology.

This guide will help with the implementation and use of CA File Master Plus for IMS facilities. This guide also addresses the concerns of CA File Master Plus for IMS administrators and users who are implementing CA File Master Plus for IMS.

Notation Conventions

This guide uses the following conventions:

- Terms and concepts that appear in italic are being introduced for the first time.
- Text that appears in bold conveys important information.

Command Notation

The following conventions are used to illustrate command syntax:

- Commands that appear in bold should be typed exactly as shown.
- Commands are shown in all CAPITALS.
- Commands, libraries, and syntax displayed on the screen are shown in monospace bold font.
- Lines of code are shown in monospace bold font.
- Commands that appear in bold italic require you to supply a value.
- Uppercase, BOLD names are required.
- Parameters in brackets [ ] are optional with selections separated by a vertical bar |.
- Parameters in braces {} are sets of alternatives separated by a vertical bar |. You must choose one of these sets.
A parameter can be a single word or set of parameters grouped by brackets or parentheses (part of the command syntax). An example follows:

COMMANDNAME

[AN OPTIONAL CLAUSE. IF USED, EVERYTHING WITHIN THE BRACKETS IS REQUIRED]

{YOU MAY USE ANY OR ALL OF THE ITEMS IN THESE BRACES IN THIS ORDER}

| {OR YOU MAY USE ANY OF THESE ITEMS IN THESE BRACES [WITH AN OPTION] }

(THE ITEMS IN THESE BRACKETS MAY BE REPEATED MULTIPLE TIMES)
Chapter 2: Using CA File Master Plus for IMS

This chapter provides introductory and conceptual information about using CA File Master Plus for IMS.

CA File Master Plus for IMS performs a variety of functions using DB2 databases of various organizations. These functions are described in detail in later sections.

This section contains the following topics:

Getting Help (see page 13)
Screen Fields (see page 14)
Layouts (see page 14)
Filters (see page 16)
Execution Modes (see page 16)
Wildcard Selection (see page 16)
Confirm Member Deletion (see page 19)
Override Print Output Control (see page 19)

Getting Help

Screen-level and field-level help for CA File Master Plus for IMS provide all of the assistance needed to perform the various screen functions. The help facility provides the assistance you require to use each screen without a manual. Screen-level help describes the concepts and diversified uses of each screen and its associated fields.

Use the 'HELP' PF key or HELP command to request screen-level help. Field-level help is available for most fields. HELP is requested when the cursor is positioned at a field. The field help pop-up window explains what to enter into the field, and lists any code values related to the field.

An extended help message is available for each error or informational message that appears on the upper right corner of the screen. If the action required to correct an error is not apparent, request HELP to cause the extended help text to display on the screen. The extended help text is designed to provide the diagnostic information that you need.
Screen Fields

CA File Master Plus for IMS supports two facilities, the wildcard facility, and the DSN facility, that simplify the entry of a data set name into screen fields.

- Using Wildcards
  - When you enter a wildcarded DSN, directories of the DSNs matching that wildcard are displayed. Select the DSN that replaces the wildcarded DSN.
  - When you enter a wildcarded member name, you see a directory of members within the data set that match the wildcard. You then select the member you want from the list.

- Using the DSN list facility
  Commonly used data sets can be defined to a DSN List facility by using option D from the Main Menu. One or more DSN List may be defined. Lists are saved as a member in the DSN List Partitioned Data Set (PDS), defined in the 0.3 Parm Files option. Each DSN List is a list of DSNs cataloged to a DSN List name. You can enter any of the following syntaxes into a DSN field on a screen to invoke the DSN List facility to allow selection of the DSN you want:
    - D to request a directory of DSN Lists
    - D ddddd (where 'dddddd' is the name of a DSN list)
    - D #nn (where nn is a number between 1-99)

Layouts

The next two sections discuss formatted record layouts and Custom Record Layouts.

Record Layouts

Record layouts are used for those functions where field-level processing is helpful, such as:

- Browsing, editing, and printing of databases using a formatted mode
- Specifying filters (selection criteria) using conditions that evaluate field values
- Record layouts can consist of concatenated PDSs

To use a record layout, define either the data set and member name of a COBOL or PL/I layout member, or a Custom Record Layout (CRL).
Segment Layout Cross Reference

The Segment Layout cross reference file is a PDS that is used to cross reference segments with their layouts when the segment and layout do not share the same name. CA File Master Plus for IMS uses the segment layout cross reference file to resolve a segment’s layout when asked to format a segment. For more information on setting up the segment layout cross-reference file, see the Segment Layout Cross Reference section in chapter "Setting Environmental Parameters for Processing."

Custom Record Layouts

You use Custom Record Layouts when layouts redefine each other, are imbedded in a program, or do not start at the first byte of a record. They can also be used to selectively display or omit one or more fields from displaying. Use Option 6, LAYOUT, from the CA File Master Plus for IMS Main Menu to define a Custom Record Layout with one or more of the following combinations:

- Record layout consisting of multiple redefined fields. Choose which redefinition to use based on field content or as a default.
- Record layout extracted from program source.
- Record layout with an offset applied because it does not start at the beginning of a record.
- Select or omit fields from displaying.
- Custom record layouts can contain concatenated record layouts PDSs.
Filters

CA File Master Plus for IMS supports both cataloged and dynamic filters, as described next:

Cataloged Filter

Can be defined using option 5, Filter, from the CA File Master Plus for IMS. Filtering can be defined using criteria such as segment counts, keys, selection limit, search limit, and filter condition. The cataloged Selection Criteria is saved to your Selection Criteria Parm PDS, defined using option 0.3, Parm Files. To use a cataloged filter, specify the member name of the cataloged filter in the Selection Criteria member field of the processing screen.

Dynamic Filters

For simple filters that are not to be reused, specify the filter condition in the dynamic Selection Criteria field of the processing screen. The field-level help provides the syntax information needed to define an improvised filter.

You must specify a filter or selection criteria when processing involves selected data segments from a database. The processing screens that support filters are:

- Browse
- Edit
- Extract
- Print
- Reload

Execution Modes

Many of the CA File Master Plus for IMS utility functions can be performed either online or in batch. Screens used to request these functions have an Execution Mode field at the bottom of the screen. The three choices for Execution Mode are:

- O—Perform the request online
- S—Generate and submit JCL to perform the request
- E—Edit the JCL generated to perform the request

Wildcard Selection

CA File Master Plus for IMS supports the use of wildcards in the selection of DSNs and PDS member names.
Select a DSN to Resolve a Wildcarded DSN

The Select DSN to Resolve Wildcarded DSN screen opens when you enter a wildcarded data set name in any of the DSN fields. A list of the DSNs that match the wildcarded specification is listed on this screen. Selecting a DSN replaces the wildcarded DSN.

To select a DSN to resolve a wildcarded DSN

1. Enter a wildcarded data set in any of the DSN fields.

When entering a wildcarded DSN, you can enter an asterisk (*) to represent any number of characters with any value, and you can enter a percent sign (%) to represent one character of any value.

The Select DSN for screen opens.

This screen displays the following information:

**DSN**

Displays the data set name of each of the data sets that match the wildcarded DSN entered on the previous screen.

**Volume**

Displays the volume serial that contains the data set of each line item.
**File Type**

Specifies the description of the type of file taken from the catalog.

**Values:** CLUSTER (VSAM Cluster), DATA (VSAM Data Component), INDEX (VSAM Index Component), NONVSAM (Non-VSAM), GDS (Generation data set, GDG (Generation data group), PATH (VSAM path), AIX (VSAM Alternate Index), ALIAS (Alias), CAT (User catalog)

**Note:** In addition to selecting the DSN you want, you can optionally browse or edit any of the NON-VSAM data sets from this screen using the ISPF browse/edit functions, by specifying either B (Browse) or E (Edit) next to the DSN you want to browse or edit.

2. Specify S (Select) next to the DSN you want to select, and press Enter.

---

**Select Wildcard Member from a PDS Directory**

A member directory is displayed when you enter a wildcarded member name in any of the member fields.

**To select a member to resolve a wildcarded member name**

1. Enter a wildcard for a PDS member name.

   When entering a wildcarded member name, you can enter an asterisk (*) to represent any number of characters with any value, and you can enter a percent sign (%) to represent one character of any value.

   The Select member to process from screen opens.

```
Select member to process from 'FM.INST.SELECT' Row 1 to 2 of 2
COMMAND ===>                                                  SCROLL ===> CSR

S  Name    Description                                Changed    Size    ID
_ SELGRD12 Select all Seniors                           2005/04/25 10:37    2 USERID
_ SELSICK  Select all Students with a sick day         2005/04/25 10:37    2 USERID
******************** End of Selection Criteria Member List ********************
```

2. Specify S (select) next to the member you want to select, and press Enter.

**Note:** To assist in the location of the member you want, the SORT and LOCATE commands are supported. Sort the directory by any of the columns in the directory by entering SORT column_heading A/D. A/D is an optional parameter signifying the sort order sequence, 'A' for ascending and 'D' for descending. For example, SORT CHANGED D sorts the directory in descending order of Changed. The command L or LOC followed by a value will position to the first member directory entry whose sort sequence field is greater than or equal to the specified value.
Confirm Member Deletion

To confirm the deletion of a member, use the Confirm Member Delete screen. This screen opens when a request is made to delete a member online and the Processing Defaults, option 0.1, indicate that member deletes must be confirmed before they are performed.

To confirm the deletion of a member, press Enter.

**Note:** Press CANCEL or END (or PF Key) to prevent the member delete from occurring.

| CA File Master Plus for IMS ------ Confirm Member Delete |
| COMMAND ===> |
| Data Set Name: 'FM.INST.DSNLIST' |
| Member to be Deleted: DSNLISTT |
| Y Confirm subsequent member deletes? |
| ENTER to confirm delete. |
| CANCEL or END to cancel delete. |

**Note:** Additionally, there is an indicator that controls whether to perform confirmation for subsequent member deletes during the same invocation of the current screen. Setting this indicator to 'N' causes member deletes to be performed without confirmation until the current screen is exited.

Member delete confirmation can be discontinued by going to the Processing Defaults screen, Option 0.1, and setting the "Confirm Member Delete?" field to **N**.

Override Print Output Control

To print a database and to control the print destination for the current print, use the Override Print Output Control screen. This screen opens when a request is made to print a database and the Processing Defaults, option 0.1, indicate that print class and destination must be confirmed before the print is performed.
To print a database and to control the print destination output

1. Confirm the Print IMS Database panels variables by pressing Enter.

The Override Print Output Control screen opens.

```plaintext
--- CA File Master Plus for IMS -- Override Print Output Control --
COMMAND ===> 

Sysout class ===> A
Number of copies ===> 1

Enter One of the Following to Control Print Destination (Optional):

  Destination printer ===> 

  OR External JES node ===> 
      Userid at JES node ===> 

  OR Sysout writer name ===> 

  OR Print dataset name ===> 
      Dataset disposition ===> (NEW, SHR, or MOD)

ENTER to proceed
```

**Note:** The parameters updated on the Override Print Output Control screen are used to control the print destination for the current print request only. They do not affect the default print destination control parameters which are maintained using Option 0.2, the Print Output Control Parms screen.

2. Complete the following fields:

**SYSOUT class**

 Defines the one-position sysout class to which the print is to be routed. This parameter field corresponds to the SYSOUT= JCL parameter.

**Values:** *, A to Z, and 0 to 9

**Number of copies**

 Defines the number of print copies needed. This parameter field corresponds to the COPIES= JCL parameter.

**Values:** 1 to 255

3. Complete one of the following selections, and press Enter.

**Destination printer**

 Defines the printer ID of a local or remote printer to which print output is to be routed. This field corresponds to the JCL parameter DEST=.

**Values:** One of the following formats: Rnnnn, RMnnnn, or RMTnnnn (where nnnn is the one-to-four digit remote printer ID).

This parameter field corresponds to the DEST= JCL parameter.
External JES node and Userid at JES node

Defines an external JES node and the user ID at the JES node to route print output to a specified user ID within an external node.

These fields operate like the DEST=(nnnnnn,uuuuuu) JCL parameter where 'nnnnnn' is JES node ID and 'uuuuuu' is a user ID.

Sysout writer name

Defines the member name of the writer when you want the print to be handled by a sysout writer program. This program is a started task that controls each output record and performs user-defined processing to manipulate and route the print file.

This field corresponds to the SYSOUT=(c,wwwwww) JCL parameter where c is the Sysout Class and wwwww is the name of the Sysout Writer Program.

Print dataset name

Defines the data set name to which the print is to be routed.

Note: Use of this parameter causes the print to be written to the specified data set instead of being written to a Sysout class.

Data set disposition

Specifies the data set disposition.

Values: NEW (Create a new data set), SHR (Overlay an existing data set), MOD (Append print to the data set's current data)

Note: Only the first character of the value is required, because the rest of the value is implied from the first character.

Your updates are used only for the current print request.
Chapter 3: Using the Main Menu

This chapter introduces the CA File Master Plus for IMS Main Menu and its functions.

This section contains the following topics:
Main Menu (see page 23)

Main Menu

The CA File Master Plus for IMS Main Menu is the first menu displayed when default installation option FMIMS is invoked. From the Main Menu, you can easily navigate all functions.
Setup

This function is used to maintain your personal defaults, which can be any of the following:

- Your processing defaults and jobcard, used when submitting batch jobs from within CA File Master Plus for IMS
- Your print defaults
- Your default parameter files for DSN Lists, Selection Criteria Custom Record Layouts, Segment cross reference, and IMS Environments
- Your segment layout cross reference members
- Your online DLI and BMP IMS environment members

Browse and Edit

These functions provide online browse and edit capabilities for supported IMS databases. The browse and edit functions have the ability of displaying data in character, hex, and record format, based on a specified COBOL or PL/I layout. Browse and edit also support the filtering and selection of records to be displayed. See the Record Layouts section later in this chapter. Record filter/selection criteria can be predefined or specified when you use the browse and edit function.

Utilities

CA File Master Plus for IMS provides the following utility functions:

- Database Extract/Reload
- Database initialization
- IMS DBD hierarchical display from DBD
- Generation of ACB, DBD, MDA, and PSB Source
- Generation of extract file record layouts

Print

The print utility allows online generation and submission of Batch JCL to print IMS Databases. It supports printing segments based on optional segment filter and selection criteria, printing segments in single record layout format from COBOL or PL/I layouts, and in character or hex formats.
Filter

The Browse, Edit, Extract, Print, and Reload functions support the ability to select IMS database records by the specification of a filter/selection criteria. The filter and selection criteria support a condition or compound conditions that compare field values to other field values or literals. These conditions can be specified using segment names, field names, or position. IMS segments can be selected based on a key or field value. IMS segments can also be selected based on a maximum number of IMS segments to which selection criteria will be evaluated, maximum number of IMS segments to be selected, or with a selection interval (specified number of segments selected, then a specified number of segments skipped). These selection criteria can be stored and reused in multiple functions, or they can be dynamically specified on the main screen for all supported functions.

Layouts

The next two sections discuss formatted record layouts and Custom Record Layouts.

Formatted Record Layout

Record layouts can be viewed to show the field name, position, length, and format of each field within the record layout. Record layouts must be members in a PDS, a CA Librarian data set, a CA Panvalet data set, or can be embedded within a program or other member.

The following screen shows an example of a COBOL layout:

```
--- View Layout 'STUDENT' of 'FMIMS.IVP.COPYLIB' ---------- Row 1 of 13

COMMAND ===>                                                 SCROLL ===> CSR

Field                               Fmt   Pos    Len
-----                               ------  ------  ------
01 STUDENT-SEGMENT                1     274
  05 STUDENT-ID                    N     1     5
  05 STUDENT-NAME                  A     6     30
  05 STUDENT-ADDR                  A     36     47
  10 STUDENT-STREET                A     36     25
  10 STUDENT-CITY                  A     61     15
  10 STUDENT-STATE                 A     76     2
  10 STUDENT-ZIP-CODE              A     78     5
  05 STUDENT-HOME-PHONE            A     83     12
  05 STUDENT-EMAIL-ADDR            A     95     30
  05 STUDENT-EMERGENCY-CONTACT     A    125     50 Occurs 3
  10 STUDENT-CONTACT-PERSON        A    125     30
  10 STUDENT-CONTACT-PHONE         A    155     20

******************************************************************************
```
Custom Record Layout

CA File Master Plus for IMS supports Custom Record Layouts (CRL). A CRL lets you define more complex record layouts. They are constructed in the following ways:

- Record layout extracted from a program source or other member
- Record layout comprising multiple record layouts in a PDS member that redefine each other
- Record layout based on a subset of data names (fields) specified in a stand-alone layout or a layout embedded in a program or other member
- Record layout that must be adjusted by a specific offset to match data records

CRLs also support a straightforward parameter syntax that allows the evaluation of record type fields to determine which redefined record applies to a specific segment’s data. Easy-to-use ISPF panels that format a COBOL or PL/I layout are available to automatically generate the syntax used in Custom Record Layouts.

DSN List

The online DSN list feature maintains lists of data set names that can be referred to by their DSN List member name, or by special syntax in all Data Set Name fields in CA File Master Plus for IMS menus. This feature provides the ability to maintain these custom lists of data sets, and allows easy execution of related functions against the data sets defined in their DSN Lists.
Chapter 4: Setting Environmental Parameters for Processing

This chapter describes how you can set up environmental parameters that affect processing of CA File Master Plus for IMS. These parameters are used to:

- Define processing control parameters and the job statement used for batch jobs and online functions
- Define the Sysout class and print destination for printed output
- Define and update the processing parameter PDSs and processing parameter members
- Maintain the Segment Cross Reference file
- Define the DLI and BMP IMS environments available to the session

This section contains the following topics:

How to Set Up Processing Parameters (see page 27)

How to Set Up Processing Parameters

Before you use CA File Master Plus for IMS, you need to set up the processing parameters. Use the Setup and Processing Parameters screen to specify these parameters.

Follow these steps to set up your processing environment:

1. Use the Setup and Processing Parameters screen as the starting place to set up all of your parameters.

```
-------- CA File Master Plus for IMS -- Setup and Processing Parameters --------
OPTION   
1  DEFAULT    Processing defaults and jobcard
2  PRINT      Print output control parameters
3  PARM FILES Definition and update of processing datasets
4  XREF       Segment Layout Cross Reference
5  IMS ENV    DLI & BMP Environments
```
2. Select each of the five options from the Setup and Processing Parameters screen and set up the parameters for each option.

   1 DEFAULT
   Defines processing control parameters and the job statement to be used for batch jobs and online functions.

   2 PRINT
   Defines the Sysout class and print destination for printed output.

   3 PARM FILES
   Defines and updates the processing parameter PDSs and processing parameter members.

   4 XREF
   Maintains the Segment Cross Reference file.

   5 IMS ENV
   Defines the DLI and BMP IMS environments that are available for the session.

**Define Processing Defaults and Jobcard Parameters**

You can customize CA File Master Plus for IMS to define control parameters related to screen and batch job operations. The first time you access the screen, you will see the most commonly used values.

**Note:** CA recommends setting the processing default parameters and the jobcard parameters before performing any other function.

**To define screen and batch control parameters**

1. Select SETUP from the Main Menu.
   The Setup and Processing Parameters screen opens.

2. Select DEFAULT from the menu.
The Processing Defaults and Jobcard screen opens.

<table>
<thead>
<tr>
<th>Command</th>
<th>Confirm member deletes?</th>
<th>Use '=' to jump within CA product?</th>
<th>Confirm print class &amp; destination?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
</tbody>
</table>

**Work Space Allocation:**

<table>
<thead>
<tr>
<th>DASD Unit Name</th>
<th>SYSDA</th>
</tr>
</thead>
</table>

**JOB Information:**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
</table>

3. Complete the following fields:

**Confirm member deletes?**

Specifies whether you want a confirmation screen before deleting a member from a library. The confirmation screen gives you the opportunity to either proceed with the member deletion or bypass it. You can set an indicator to bypass member delete confirmations until you exit the current screen, when the member delete confirmation screen opens.

**Values:** Y (Yes), N (No).

**Use ‘=’ to jump within CA product?**

Specifies whether you want to jump from one function to another within CA File Master Plus for IMS (Y), or jump to the ISPF function (N).

**Values:** Y (Yes), N (No)

**Example:** With a value of Y, when the command =3.1 is entered, CA File Master Plus for IMS would jump to CA File Master Plus for IMS Option 3.1, Extract IMS Database. With a value of N, the same command would jump to ISPF's Option 3.1.

**Confirm print class & destination?**

Specifies whether you want a confirmation screen displayed before requesting an online print and before submitting a batch job that requests print. This confirmation screen shows the Sysout class and the destination parameters that have been defined using the Print Output Control Parms screen.

**Values:** Y (Yes), N (No)
Example: With a value of Y, each time a print is requested, the Override Print Output Control panel is displayed, allowing you to change the current print settings for the print request. With a value of N, you are not given the opportunity of updating the current print settings before the print request.

DASD Unit Name

Specifies the initial value used for the generic unit name when new datasets are allocated in CA File Master Plus for IMS. To control the volumes on which new data sets are allocated, the DASD unit name or the SMS storage class must be specified (but not both).

Default: SYSDA

SMS Storage Class

Defines the initial value for the SMS storage class used for the allocation of new data sets if the data sets are to be SMS-managed.

To control the volumes on which new data sets are allocated, the DASD unit name or the SMS data class must be specified (but not both).

Job Information:

Defines one to four lines of JCL control statements, usually jobcard information. These four lines are added to the beginning of any online generated batch jobs.

The control parameters are defined.

Define Print Output Control Parameters

To define the default parameters that control print destinations, use the Print Output Control Parms screen.

Note: If you want to see what these parameters are so you know whether to update them, select Y in the Confirm print class & destination field on the Processing Defaults and Jobcard screen. The pop-up displays all of the default print control parameters.

To define print output control parameters

1. Select SETUP from the Main Menu.
   The Setup and Processing Parameters screen opens.
2. Select Print from the menu.
The Print Output ControlParms screen opens.

```
--------- CA File Master Plus for IMS -- Print Output ControlParms --------
COMMAND ===> 
Sysout class ===> *
Number of copies ===> 1

Enter One of the Following to Control Print Destination (Optional):
  Destination printer ===> 
  OR External JES node ===> 
    Userid at JES node ===> 
  OR Sysout writer name ===> 
  OR Print dataset name ===> 
    Dataset disposition ===> (NEW, SHR, or MOD)
```

3. Complete the following fields:

**Sysout Class**

Defines the one-position sysout class where the print output is routed. This field corresponds to the SYSOUT= JCL parameter.

**Values**: *, A to Z, and 0 to 9

**Number of copies**

Defines the number of printed copies. This field corresponds to the COPIES= JCL parameter.

**Values**: 1 to 255

4. Complete one of the following selections, and press Enter.

**Destination printer**

Defines the printer ID of a local or remote printer where print output will be routed. This field corresponds to the JCL parameter DEST=.

**Values**: One of the following formats: Rnnnn, RMnnnn, or RMTnnnn (where nnnn is the one- to four-digit remote printer ID).

**External JES node and Userid at JES node**

Defines the external JES node and user ID at the JES node to route print output to a specified user ID within an external node.

These fields operate like the DEST=(nnnnnn,uuuuuu) JCL parameter (where nnnnnn is JES Node ID and uuuuuu is a user ID).
Sysout writer name

Defines the member name of the writer program when you want print handled by a sysout writer program. This program is a started task that gets control for each output record and performs user-defined processing to manipulate and route the print file.

This field corresponds to the SYSOUT=(c,wwwwww) JCL parameter (where c is the Sysout Class and wwwww is the name of the Sysout Writer Program).

Print dataset name

Defines the data set name where the print is to be routed.

Note: Use of this parameter causes the print to be written to the specified data set instead of being written to a Sysout class.

Dataset disposition

Specifies the data set disposition.

Values: NEW (Create a new data set), SHR (Overlay existing data), MOD (Append print to the data set’s current data)

Define and Update Processing Parameters

Use the Define & Update Processing Parms screen to define the DSNs of the following processing parameter files and members:

- DSN lists
- Selection criteria
- Custom rec layouts
- Segment XREF
- IMS environments

For each of these parameter files there is a selection field preceding the DSN that provides access to the facility for maintaining that type of parameter.

To define and update processing parameters

1. Select SETUP from the Main Menu.
   The Setup and Processing Parameters screen opens.
2. Select PARM FILES from the menu.
The Define & Update Processing Parms screen opens.

--- CA File Master Plus for IMS --- Define & Update Processing Parms ---

**COMMAND**

Update the DSN for a Processing Parm PDS or the DSN and Member Name for a Processing Parm Member. Select the specified file to enter the update facility for that parm.

**Processing Parm PDSs:**
- **S** = Select to Update
- **A** = Allocate New PDS

**DSN Lists**
- Defines the DSN list PDS.

**Selection Criteria**
- Defines the selection criteria PDS.

**Custom Rec Layouts**
- Defines the Custom Record Layout’s PDS.

**Segment XREF**
- Defines the segment cross-reference PDS.

**IMS Environments**
- Defines the IMS Environment PDS.

**Note:** To make it easier to specify DSNs, each of the DSN fields on this screen supports wildcarded DSN and DSN Lists. Each PDS can be a personal parm PDS, a parm PDS shared with others in the organization, or a parm PDS that is shared company-wide.

3. Specify S (select to update) or A (allocate new PDS) for the following fields:

**DSN Lists**
- Defines the DSN list PDS.

**Selection Criteria**
- Defines the selection criteria PDS.

**Custom Rec Layouts**
- Defines the Custom Record Layout’s PDS.

**Segment XREF**
- Defines the segment cross-reference PDS.

**IMS Environments**
- Defines the IMS Environment PDS.

**Note:** This PDS may be restricted by the CAWKOPT COM_IMSENV_DSN installation option. If this is the case, the user must have File Master DBA authority to update this protected field.

**More Information:**

For more information on DSN lists, see the chapter "Working with the DSN List Directory" (see page 189)."
For more information on selection criteria, see the chapter "Using the Filter Option" (see page 157)."
For more information on record layouts, see the chapter "Working with Record Layouts" (see page 169)."
Define Segment Layout Cross-Reference Members

To define segment layout cross-reference members, use the Specify Database for Segment XREF Parm Update screen. Using this screen, you can access the segment layout cross-reference data set to create new segment layout cross-reference members, or update current members.

To define segment layout cross reference members

1. Select SETUP from the Main Menu.
   The Setup and Processing Parameters screen opens.
2. Select XREF from the menu.
   The Segment XREF Parm Update screen opens.

3. Complete the following fields, and press Enter:
   **DSN**
   Defines the segment cross reference PDS that is defined in option 0.3, Define and Update ProcessingParms.
   **Member Name**
   Defines the DBD for which the segment cross reference member is to be created.
The Update Segment XREF Parm Member pop-up opens.

```
----- Update Segment XREF Parm Member ------ Row 1 of 7
COMMAND ===>            SCROLL ===> CSR

Database   ===> DBDIVP

DBDLIB DSN ===> 'YOUR.DBDLIB'

Segment       Layout
Name         Name
STUDENT
SUBJECT
TEACHER
CLASS
HISTORY
TRANSCRIPT
ATTEND

********** End of Segments ***********************
```

4. Complete the following fields, and press Enter:

   **Database**

   Defines the database definition (DBD name) whose segments will be cross-referenced. The DBD member name must exist in the DBDLIB DSN to create a segment layout cross-reference member.

   **DBDLIB DSN**

   Defines the library that contains the DBD the cross-reference member redefines.

5. Enter the actual layout member name for the segments in the Layout Name field.


   Your changes are saved.

**How Layouts Are Resolved**

CA File Master Plus for IMS resolves layouts by performing the following actions:

- Searches the segment cross-reference file for a member that matches the DBD Name.

- If no DBD name match is found, then it attempts to resolve the layout by matching the segment name with the member names in the layout data set library. If no member name is found in the layout data set library, then it generates and displays a default COBOL layout.

- If a DBD name match is found, then it reads that member, and searches the layout data set library for the segment name's cross-referenced layout name. If no member name is found in the layout data set library, then it generates and displays a default COBOL layout.
IMS Environments

An IMS environment is a PDS member that specifies the IMS system data sets and parameters that CA File Master Plus for IMS uses to access a database. You must specify an IMS environment for most of the online ISPF functions, and when running a batch function in BMP mode.

Two types of IMS environments are supported: DLI and BMP. The DLI environment runs as an offline batch processing region to which the databases are directly allocated. Included in each DLI environment definition are the IMS RESLIBs, PSBLIBs, and DBDLIBs used to access databases.

The BMP environment runs as a batch message processing region that communicates with an IMS control region to access the databases owned by the control region. Information included in the BMP environment definition is the IMS subsystem identifier, or IMSID, the RESLIBs, and ABLIBs used in the IMS control region.

The information for each IMS environment parm member is often defined during product installation. Users may share the same IMS environment parm members. However, users may create new members in this parm PDS, or may create new versions of this parm PDS.

Display IMS Environment Members

Use the Update IMS Environment screen to display a list of the defined IMS Environment members. This screen has one line for each IMS environment member in the IMS environment parm PDS.

To display IMS environment members

1. Select SETUP from the Main Menu.
   The Setup and Processing Parameters screen opens.
2. Select IMS ENV from the menu.
   The Update IMS Environment screen opens, listing the IMS Environments currently defined.

<table>
<thead>
<tr>
<th>IMS</th>
<th>DLI/</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>_ DLIPROD_</td>
<td>DLI</td>
<td>Prod DLI Environment</td>
</tr>
<tr>
<td>_ BMPRGNA_</td>
<td>BMP</td>
<td>BMP Region A</td>
</tr>
<tr>
<td>_ DLITEST_</td>
<td>DLI</td>
<td>Test DLI Environment</td>
</tr>
</tbody>
</table>

END OF IMS Environment List
Insert a New IMS Environment Member

Use the Specify IMS Environment Type pop-up to define the IMS Environment member type you want to insert.

To insert a new IMS environment

1. Select SETUP from the Main Menu.
   The Setup and Processing Parameters screen opens.
2. Select IMS ENV from the menu.
   The Update IMS Environment screen opens.
3. Type I (insert) next to any environment, and press Enter.
   The Specify IMS Environment Type pop-up opens.

   --- Specify IMS Environment Type ---
   COMMAND ===> 

   Enter 'DLI' or 'BMP' to specify the type of IMS Environment Parm Member to be inserted.

   Environment Type ===> 

4. Specify the IMS environment type in the Environment Type field.
   Values: DLI and BMP
5. Press Enter.

   Continue with step 4 of the section Select/Repeat a DLI Environment Member. If you entered a BMP member, continue with step 4 of the Select/Repeat a BMP Environment section.

Select/Repeat a DLI Environment Member

To define, maintain, or update a DLI environment, and to save this environment definition into a member of the IMS Environment Parm PDS, you can use the DLI Environment Parameters screen. A DLI environment is required for each set of data sets used to invoke an IMS process in DLI mode.

For example: Various QA and test systems that require different DBDLIB, PSBLIB, or RESLIB data sets require separate DLI environments.

Each batch or on-line process that performs functions such as browsing, editing, printing, unloading, reloading, or updating an IMS database, needs to know the IMS data sets to use when invoking IMS in DLI mode to perform the function. The use of DLI environments allows a set of IMS data sets to be catalogued and referenced by the DLI Environment Name.
To select or repeat a DLI environment member

1. Select SETUP from the Main Menu.
   
   The Setup and Processing Parameters screen opens.

2. Select IMS ENV from the menu.
   
   The Update IMS Environment screen opens.

3. Type S (select) or R (repeat) next to the environment whose definition you want to select or repeat.
   
   The DLI Environment Parameters screen opens with the DLI Environment parameters populated with their current values.

4. Complete the following fields, and press F8.

   **IMS Environment**
   
   Displays the IMS environment member name that identifies the DLI environment that is defined by this screen. The IMS environment name is the member name of the IMS environment parm PDS that will be updated when you exit this screen.

   **Description**
   
   Defines the use of this IMS DLI environment and differentiates it from other IMS environments.

   **Limits:** 42 characters.
RESLIB

Defines up to 3 RESLIB DSNs. The More field to the right of the IMS RESLIB #3 field is used to enter more than 3 RESLIB DSNs. When more than 3 RESLIB DSNs are defined for the DLI environment, this field contains the protected literal + More DSNs.

Note: This field may be restricted by the CAWKOPT COM_IMSENV_DLI installation option. If this is the case, the user must have File Master DBA authority to update this protected field.

PSBLIB

Defines up to 3 PSBLIB DSNs. The More field to the right of the IMS PSBLIB #3 field is used to enter more than 3 PSBLIB DSNs. When more than 3 PSBLIB DSNs are defined for the DLI environment, this field contains the protected literal + More DSNs.

Note: This field may be restricted by the CAWKOPT COM_IMSENV_DLI installation option. If this is the case, the user must have File Master DBA authority to update this protected field.

DBDLIB

Defines up to 3 DBDLIB DSNs. The More field to the right of the IMS DBDLIB #3 field is used to enter more than 3 DBDLIB DSNs. When more than 3 DBDLIB DSNs are defined for the DLI environment, this field contains the protected literal + More DSNs.

Note: This field may be restricted by the CAWKOPT COM_IMSENV_DLI installation option. If this is the case, the user must have File Master DBA authority to update this protected field.

More?

Defines whether you want to add more data sets to these library concatenations. Contains up to a total of 99 DSNs for each library concatenation.

Values: Y (Yes), N (No)

+ More DSNs

Defines whether the library concatenations contain more data sets than the three displayed on this panel. Placing the cursor anywhere on this character string, and pressing Enter, displays the entire library’s concatenation.

VSAM Parm Mem

Defines the DSN and member name for the VSAM/OSAM Buffer Information Parm. IMS batch jobs created by the user interface will have this parm member allocated to the DFSVSAMP DDNAME.

Note: This field may be restricted by the CAWKOPT COM_IMSENV_DLI installation option. If this is the case, the user must have File Master DBA authority to update this protected field.
Log DSN

Defines the DSN for the IMS log data set. Required for any online or batch IMS process in which there is update intent on a database. This file is required for recovery and restart of any IMS job. If the DSN already exists, it must be allocated with RECFM=VB LRECL=4092 BLKSIZE=4096.

The DSN entered can be a valid DSN or may contain any of the following variable specifications to support the use of multiple log files for a DLI environment:

- &USERID—TSO User ID
- &DATE—Dyymmdd where yymmdd is the date in YYMMDD format
- &TIME—Thhmmss where hhmmss is the time in hours, minutes, and seconds
- &DBDNAME—DBD name of the database being processed

For example, a value of &USERID.&DATE.FMIMS.LOG would request an IMS log data set with the TSO User ID in the first node and the date in the second node. If USER01 does an update on Dec. 25, 2006, it will be written to the log USER01.D061225.FMIMS.LOG.

If the IMS log data set does not exist when the online process or online creation of JCL occurs, an IMS log data set will be created.

**Note:** This field may be restricted by the CAWKOPT COM_IMSENV_DLI installation option. If this is the case, the user must have File Master DBA authority to update this protected field.

Change Log Parameters:

Volume Serial

Specifies the 6 digit volume serial of the volume that the Change Log file should be created on.

**Note:** This field may be restricted by the CAWKOPT COM_IMSENV_DLI installation option. If this is the case, the user must have File Master DBA authority to update this protected field.

Generic Unit Name

Defines the DASD unit name used to allocate the Change Log file. Common DASD unit names are SYSDA and SYSALLDA.

**Note:** This field may be restricted by the CAWKOPT COM_IMSENV_DLI installation option. If this is the case, the user must have File Master DBA authority to update this protected field.
Primary Cyls

Defines the primary number of cylinders to allocate to a new Change Log file. Specify the estimated number of cylinders to contain the before and after images of all changed segments, plus any inserted or deleted segments during an EDIT session or sessions.

If this value is 0, no Change Log records are written and no Change Log file is allocated to the EDIT session. Any value greater than zero allocates the Change Log file and causes the EDIT function to record Change Log records for any segment changes during and EDIT session.

**Default:** Zero

**Values:** Numeric, between 0 and 9999999.

**Note:** This value cannot be set to 0 when Change Log is activated by your CA File Master Plus for IMS administrator.

**Note:** This field may be restricted by the CAWKOPT COM_IMSENV_DLI installation option. If this is the case, the user must have File Master DBA authority to update this protected field.

Secondary Cyls

Defines the number of secondary cylinders to allocate to a new Change Log file if the primary cylinder allocation is exceeded.

**Default:** Zero

**Values:** Numeric, between 0 and 9999999.

**Note:** This field may be restricted by the CAWKOPT COM_IMSENV_DLI installation option. If this is the case, the user must have File Master DBA authority to update this protected field.
5. Press PF8 to go to the second DLI Environment Parameter screen. The DLI Environment Parameters screen opens.

```
--------------- CA File Master Plus for IMS -- DLI Environment Parameters ------------
Command ===> __________________________________________________________________

IMS Environment ===> DLIPROD                                       Page 2 of 2
Description ===> Production DLI Environment
DBRC Usage      ===> _
Blank = Defer to IMS System Definition Specification (Default)
               Y = Use DBRC
               N = Do not use DBRC
RECON Dataset Overrides:
  RECON1          ===> ______________________________________________
  RECON2          ===> ______________________________________________
  RECON3          ===> ______________________________________________
PF1 HELP         PF3 END          PF7 BACK
```

6. Complete the following fields, and press End to save the DLI member.

**IMS Environment**

Displays the IMS environment member name that identifies the DLI environment that is defined by this screen. The IMS environment name is the member name of the IMS environment parm PDS that is updated when you exit this screen.

**Description**

Defines the use of this IMS DLI environment and differentiates it from other IMS environments.

**Limits:** 42 characters.

**DBRC Usage**

Defines the DBRC value when CA File Master Plus for IMS calls IMS either through its online or batch functions.

**Values:** Blank (IMS's current DBRC value), Y (Yes), N (No)

**RECON1**

Defines the RECON1 dataset that overrides the RECON1 dataset that would have been otherwise dynamically allocated by IMS.

**Note:** This field may be restricted by the CAWKOPT COM_IMSENV_DLI installation option. If this is the case, the user must have File Master DBA authority to update this protected field.
RECON2

Defines the RECON2 dataset that overrides the RECON2 dataset that would have been otherwise dynamically allocated by IMS.

Note: This field may be restricted by the CAWKOPT COM_IMSENV_DLI installation option. If this is the case, the user must have File Master DBA authority to update this protected field.

RECON3

Defines the RECON3 dataset that overrides the RECON3 dataset that would have been otherwise dynamically allocated by IMS.

Note: This field may be restricted by the CAWKOPT COM_IMSENV_DLI installation option. If this is the case, the user must have File Master DBA authority to update this protected field.

The DL1 member is saved.

Note: This value cannot be set to 0 when Change Log is activated by your CA File Master Plus for IMS administrator.

Select/Repeat a BMP Environment Member

To define, maintain, or update a BMP environment member, and to save it to the IMS Environment Parm PDS, use the BMP Environment Parameters screen.

To select or repeat a BMP environment member

1. Select Setup from the Main Menu.
   The SETUP and Processing Parameters screen opens.

2. Select IMS ENV from the menu.
   The Update IMS Environment screen opens.
3. Type S (select) or R (repeat) next to the environment whose definition you want to select or repeat.

The BMP Environment Parameters screen opens with the BMP Environment parameters populated with their current values.

<table>
<thead>
<tr>
<th>COMMAND ====&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>IMS Environment ===&gt; BMPREGMA</td>
</tr>
<tr>
<td>BMP Region ===&gt; RGNA</td>
</tr>
<tr>
<td>Description ===&gt; BMP Region A</td>
</tr>
<tr>
<td>RESLIB #1 ===&gt; 'YOUR.IMS.RGNA.RESLIB'</td>
</tr>
<tr>
<td>#2 ===&gt;</td>
</tr>
<tr>
<td>#3 ===&gt; More? ===&gt; N</td>
</tr>
<tr>
<td>ACBLIB #1 ===&gt; 'YOUR.IMS.RGNA.ACBLIB'</td>
</tr>
<tr>
<td>#2 ===&gt;</td>
</tr>
<tr>
<td>#3 ===&gt; More? ===&gt; N</td>
</tr>
<tr>
<td>DOPT ACBLIB ===&gt; 'YOUR.IMS.RGNA.DBC.DOPT.ACBLIB'</td>
</tr>
<tr>
<td>#2 ===&gt;</td>
</tr>
<tr>
<td>#3 ===&gt; More? ===&gt; N</td>
</tr>
<tr>
<td>DBDLIB #1 ===&gt; 'YOUR.IMS.RGNA.DBDLIB'</td>
</tr>
<tr>
<td>#2 ===&gt;</td>
</tr>
<tr>
<td>#3 ===&gt;</td>
</tr>
<tr>
<td>Appl Group Name ===&gt; ________</td>
</tr>
<tr>
<td>Normal Buf ===&gt; 35</td>
</tr>
<tr>
<td>Overflow Buf ===&gt; 10</td>
</tr>
<tr>
<td>Change Log Parameters:</td>
</tr>
<tr>
<td>Volume Serial ===&gt; _____ or Generic Unit Name ===&gt; ________</td>
</tr>
<tr>
<td>Primary Cyls ===&gt; 0 (0 = No Logging)</td>
</tr>
<tr>
<td>Secondary Cyls ===&gt; 0</td>
</tr>
</tbody>
</table>

4. Complete the following fields, and press Enter.

**IMS Environment**

Displays the IMS environment member name that identifies the BMP environment that is defined by this screen. The IMS environment name is the member name of the IMS environment parm member that will be updated when you exit this screen.

**BMP Region**

Defines the BMP Region ID (or IMSID) of the IMS control region where batch and on-line processes that use this BMP environment execute.

**Description**

Defines the use of this IMS environment member and differentiates it from other members.

**Limit:** 42 characters
RESLIB

Defines the RESLIB data sets that are used when accessing databases with this environment member. These must match the RESLIB data sets defined to the IMS control region. Specify up to 3 RESLIB DSNs. The More field to the right of the IMS RESLIB #3 field is used to enter more than 3 RESLIB DSNs. When there are currently more than 3 RESLIB DSNs defined for the BMP environment, this field contains the protected literal + More DSNs.

**Note:** This field may be restricted by the CAWKOPT COM_IMSENV_BMP installation option. If this is the case, the user must have File Master DBA authority to update this protected field.

ACBLIB

Defines the ACBLIB data sets that are used when accessing databases with this environment member. These must match the ACBLIB data sets defined to the IMS control region. Specify up to 3 ACBLIB DSNs. The More field to the right of the IMS ACBLIB #3 field is used to enter more than 3 ACBLIB DSNs. When there are currently more than 3 ACBLIB DSNs defined for the BMP environment, this field contains the protected literal + More DSNs.

**Note:** This field may be restricted by the CAWKOPT COM_IMSENV_BMP installation option. If this is the case, the user must have File Master DBA authority to update this protected field.

DOPT ACBLIB

Defines the DSN of the Dynamic Option ACBLIB data set where CA File Master Plus for IMS will place dynamic ACBS. This library must be in the IMSACBx concatenation defined to the BMP region controller job for this BMP region. This data set must not be the first data set in the concatenation.

**Note:** This field may be restricted by the CAWKOPT COM_IMSENV_BMP installation option. If this is the case, the user must have File Master DBA authority to update this protected field.

DBDLIB

Defines up to 3 DBDLIB DSNs. The More field to the right of the IMS DBDLIB #3 field is used to enter more than 3 DBDLIB DSNs. When there are currently more than 3 DBDLIB DSNs defined for the BMP environment, this field contains the protected literal + More DSNs.

The DBDLIB is required for the INITIALIZE function, the RELOAD function when the reload mode option is set to Load, and for building dynamic ACBs.

**Note:** This field may be restricted by the CAWKOPT COM_IMSENV_BMP installation option. If this is the case, the user must have File Master DBA authority to update this protected field.

APPL Group Name

Defines the application group name (AGN) used when invoking IMS within this BMP environment member.
How to Set Up Processing Parameters

**Normal Buf**

Defines the normal buffer allocation used when processing fast path databases within this BMP environment member.

**Default:** Zero

**Values:** Numeric, between 0 and 99999999

**Note:** This field may be restricted by the CAWKOPT COM_IMSENV_BMP installation option. If this is the case, the user must have File Master DBA authority to update this protected field.

**Overflow Buf**

Defines the overflow buffer allocation used when processing fast path databases within this BMP environment member.

**Default:** Zero

**Values:** Numeric, between 0 and 99999999

**Note:** This field may be restricted by the CAWKOPT COM_IMSENV_BMP installation option. If this is the case, the user must have File Master DBA authority to update this protected field.

**Change Log Parameters:**

**Volume Serial**

Specifies the 6 digit volume serial of the volume that the Change Log file should be created on.

**Note:** This field may be restricted by the CAWKOPT COM_IMSENV_BMP installation option. If this is the case, the user must have File Master DBA authority to update this protected field.

**Generic Unit Name**

Defines the DASD unit name used to allocate the Change Log file. Common DASD unit names are SYSDA and SYSALLDA.

**Note:** This field may be restricted by the CAWKOPT COM_IMSENV_BMP installation option. If this is the case, the user must have File Master DBA authority to update this protected field.
Primary Cyls

Defines the primary number of cylinders to allocate to a new Change Log file. Specify the estimated number of cylinders to contain the before and after images of all changed segments, plus any inserted or deleted segments during an EDIT session or sessions.

If this value is 0, no Change Log records are written and no Change Log file is allocated to the EDIT session. Any value greater than zero allocates the Change Log file and causes the EDIT function to record Change Log records for any segment changes during and EDIT session.

**Default:** Zero

**Values:** Numeric, between 0 and 9999999

**Note:** This value cannot be set to 0 when Change Log is activated by your CA File Master Plus for IMS administrator.

**Note:** This field may be restricted by the CAWKOPT COM_IMSENV_BMP installation option. If this is the case, the user must have File Master DBA authority to update this protected field.

Secondary Cyls

Defines the number of secondary cylinders to allocate to a new Change Log file if the primary cylinder allocation is exceeded.

**Default:** Zero

**Values:** Numeric, between 0 and 9999999

**Note:** This field may be restricted by the CAWKOPT COM_IMSENV_BMP installation option. If this is the case, the user must have File Master DBA authority to update this protected field.

Delete an IMS Environment Member

To delete an IMS environment member from an IMS Environment PDS, use the Update IMS Environment screen.

**To delete IMS environment members**

1. Select SETUP from the Main Menu.
   
   The Setup and Processing Parameters screen opens.
2. Type D (delete) next to the IMS ENV you want to delete.
The Confirm Member Delete screen opens only if the Confirm Member Deletes value is set to Y on the Processing Defaults and Jobcard panel. If this value is set to N, the IMS Environment is deleted without asking for confirmation.

3. Press Enter to proceed with the delete, or press CANCEL or END to prevent the member delete from occurring.

The environment member is deleted.
This chapter describes how you can browse an IMS Database. Browse supports the following database types:

- DEDB (Fast Path)
- HDAM
- HIDAM
- HISAM
- HSAM
- MSDB (Fast Path)
- PHDAM
- PHIDAM
- PSINDEX
- SHISAM
- SHSAM
- Logical Database
- Secondary Index

This section contains the following topics:

Browse IMS Databases (see page 50)
Browse IMS Databases

To browse various IMS databases, use the Browse IMS Database screen.

To browse an IMS database
1. Select BROWSE from the Main Menu.

The Browse IMS Database screen opens.

<table>
<thead>
<tr>
<th>COMMAND ====&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>IMS Database to Browse:</td>
</tr>
<tr>
<td>IMS Environment ===&gt; ________ (if static PSB being used)</td>
</tr>
<tr>
<td>PSB or ACB Name ===&gt; ________ (optional if PSB Name specified)</td>
</tr>
<tr>
<td>DBD Name ===&gt; ________ (optional if PSB Name specified)</td>
</tr>
<tr>
<td>Secondary Index ===&gt; N ('Y' for Secondary Index list)</td>
</tr>
</tbody>
</table>

| Record Layout for Formatted Displays: |
| Layout dataset ===> |
| CRL dataset ===> |

| Selection Criteria below or Selection Criteria Member ===> |
| ===> |
| ===> |

| Display mode ===> C (C Character S Single-rec Format M Multi-rec Format) |

2. Complete the following fields:

**IMS Environment**

Defines the IMS environment used to resolve various processing parameters used while browsing an IMS database. The name of an IMS environment corresponds to a member name within the IMS environment Parm PDS that is updated using option 0.5.

The IMS environment is defined as a DLI or a BMP environment. The type of IMS environment specifies whether the browse process is executed in DLI mode or within a BMP region.

This IMS environment can also be a wildcard.

**PSB or ACB Name**

Defines the PSB or ACB Name. If blank, a dynamic PSB for DLI or a dynamic ACB for BMP is generated.

In a DLI environment, the specified PSB name must be a member in a data set within the PSBLIB concatenation specified in the current IMS Environment.

In a BMP environment, the specified ACB name must be a member in a data set within the ACBLIB concatenation specified in the current IMS Environment.
To process a secondary index as a separate database you must provide a PSB or ACB in which the selected PCB’s DBDNAME parameter specifies the index DBDNAME.

These names can also be a wildcard.

**DBD Name**

Defines the DBD name to indicate the database for browsing. The DBD name must be a member in a data set within the DBDLIB concatenation specified in the current IMS Environment.

This name can also be a wildcard.

**Secondary Index**

Entering a Y allows you to view a list of associated secondary indexes for the supplied DBD Name. The PSB or ACB Name field must be blank. (When the PSB or ACB Name field is omitted, CA File Master Plus for IMS generates a dynamic PSB to access the database.)

When this field is Y, you see the Select Secondary Index Database screen that lets you select the desired secondary index from a list of secondary index databases for the database specified in the DBD Name field. After you have selected a secondary index database, the secondary index DBD Name replaces the value in the DBD Name field.

To use a secondary index with a static PSB, or if no secondary index processing is required, enter N (for no) in this field.

**Layout dataset**

Defines the DSN of the record layout data set that contains layouts for segments in this database.

You can enter a wildcarded DSN or a DSN list specification to help locate the DSN you want.

Enter 'FMCONCAT' to select the DSNList that contains the layout concatenations if the layouts are in different PDSs.

**Note:** For more information about creating concatenated PDSs, see the chapter "Working with the DSNList Directory."

**CRL dataset**

Defines the optional value to browse the database using a CRL. This data set must contain CRLs that match the segment names defined in the DBD. The segments that share the same-named CRLs are used.

The CRLs are not used for selection; they display the selected segments according to the CRL definition.

You can enter a wildcarded DSN or a DSN list specification to help locate the DSN you want. Enter an exclamation mark (!) after the name if you want the wildcarded DSN saved for your next session. If you do not enter an exclamation mark after the name, the data set you pick from the selection list is saved.
Selection Criteria or Selection Criteria Member

Specifies the selection criteria to filter the IMS database records of the input database. Dynamic Selection is entered free-form. If a Selection Criteria Member is used, then this member must be defined in the Selection Criteria PDS, defined in option 0.3, Define and Update Processing Parms. You define the actual Selection Criteria member using option 5, Define or Update a Selection Criteria. The Selection Criteria Member value can also be a wildcard.

The selection criteria are used to specify a filter based on the following types of parameters:

- Condition that evaluates data values in each segment
- Presence of a character string within a segment or specified columns or field name from a record layout
- Limit to the number of IMS database records to be selected
- Use of a cataloged selection criteria parameter member defined using CA File Master Plus for IMS or CA File Master Plus for IMS Option 0.3, Define and Update Processing Parms or Option 5 Filter
- To assist in the entry of the selection, use the LAYOUT[ROOT|segname] command. When this is entered on the command line, a screen with the ROOT's or segname's copybook is displayed. Enter the selection criteria on that screen. If the optional parameter is omitted, a screen with the database's segments is displayed, from which you can select the appropriate segment.

<table>
<thead>
<tr>
<th>Selection Criteria</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>IFREC(segname)</td>
<td>Qualifies subsequent selection criteria to a specific segment. If no IFREC or IFSEG is specified, dynamic selection criteria applies to the ROOT segment. The selected segment along with its entire IMS database record is returned.</td>
</tr>
<tr>
<td>IFSEG(segname)</td>
<td>Qualifies subsequent selection criteria to a specific database segment. If no IFREC or IFSEG is specified, dynamic selection criteria applies to the ROOT segment. When the segment matches the selection criteria, the segment is selected, along with its children, and all of the segments in its parental path. All children of the segments in the parental path are also selected. No twins of the selected segment or twins of any of the segments in the parental path will be selected, or any of their children. (Twins have the same segment name and exact same parent segment). In addition, the rest of the IMS database record will be selected. Only the segments that make up the parental path will be displayed. You can see the all other segments that were selected by entering the SEGMENT * command.</td>
</tr>
<tr>
<td>'TEXAS'</td>
<td>'TEXAS' in any case anywhere in the segment.</td>
</tr>
<tr>
<td>Selection Criteria</td>
<td>Description</td>
</tr>
<tr>
<td>--------------------</td>
<td>-------------</td>
</tr>
<tr>
<td>C’Texas'</td>
<td>Character string 'TEXAS' anywhere in the segment.</td>
</tr>
<tr>
<td>80 EQ C'NY'</td>
<td>Position 80 – 81 of any segment equals 'NY'.</td>
</tr>
<tr>
<td>State-Code NE 'NY'</td>
<td>Field State-Code not equal 'NY' (requires LAYOUT info).</td>
</tr>
<tr>
<td>State-Code = C'NY' C'TX'</td>
<td>Field State-Code equal to 'NY' or 'TX'.</td>
</tr>
<tr>
<td>80 = C'NY, TX' AND</td>
<td>Position 80-81 equals 'NY' or 'TX' AND.</td>
</tr>
<tr>
<td>100 = C&quot;100,000&quot;</td>
<td>Position 100-106 of any segment equals '100,000'.</td>
</tr>
<tr>
<td>Note: Quotes are required when the search string contains a comma.</td>
<td></td>
</tr>
<tr>
<td>Tran-DD GT '01' AND Tran-DD LT '06'</td>
<td>Field TRAN-DD is either '02', '03', '04' or '05'.</td>
</tr>
<tr>
<td>10(4) EQP</td>
<td>Position 10-13 of any segment is a valid packed value.</td>
</tr>
<tr>
<td>21 = P'0'</td>
<td>Position 21 of any segment is a packed '0'.</td>
</tr>
<tr>
<td>100(2) = P'0',1,999'</td>
<td>Position 100-101 of any segment is either P'0', P'1', or P'999'.</td>
</tr>
<tr>
<td>101(20) CO 'NEW YORK'</td>
<td>'NEW YORK' in any case of any segment is found anywhere in position 101-120.</td>
</tr>
<tr>
<td>StartKey='56789'</td>
<td>Start segment selection with the root segment whose key is GTEQ to '56789'.</td>
</tr>
<tr>
<td>Inlim=5000</td>
<td>Stop reading/selection after reading 5000 IMS database records.</td>
</tr>
<tr>
<td>SELLIM=1000</td>
<td>Only select 1000 IMS database records which match the specified selection criteria.</td>
</tr>
<tr>
<td>80 = C'NY' AND 100 = C'001'</td>
<td>Compound condition (OR also supported).</td>
</tr>
<tr>
<td>State-Code EQ C'NY' AND County-Code EQ C'001'</td>
<td>Compound condition with fields.</td>
</tr>
</tbody>
</table>

**Valid condition relational operators**

- `=` or `EQ` = Equal
- `EQP` = Equal packed value
- `EQN` = Equal numeric value
- `^=` or `NE` = Not equal
- `NEP` = Not equal packed value
- `NEN` = Not equal numeric value
- `>` or `GT` = Greater than
- `>=` or `GE` = Greater than or equal
- `<` or `LT` = Less than
- `<=` or `LE` = Less than or equal
- `CO` = Contains (that is, the specified literal is anywhere within the scan length or field)
Multiple literals may be specified by listing the literals or by listing the literal values within apostrophes separated by a comma. Following are some examples of conditions with multiple literal values.

<table>
<thead>
<tr>
<th>Conditions</th>
<th>Multiple Literal Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>80 = C'NY' C'NJ' C'MA'</td>
<td>Segment position 80-81 equals one of the three values</td>
</tr>
<tr>
<td>80 = C'NY,NJ,MA'</td>
<td>Segment position 80-81 equals one of the three values</td>
</tr>
<tr>
<td>80 = C&quot;NY,NJ,MA&quot;</td>
<td>Segment position 80-97 equals C'NY,NJ,MA' (with commas)</td>
</tr>
<tr>
<td>100(2) = P'0,1,999'</td>
<td>2-byte packed field in segment position 100 equals one of the three values</td>
</tr>
<tr>
<td>'abc,123,xyz'</td>
<td>Segment contains one of the three values</td>
</tr>
<tr>
<td>&quot;abc,123,xyz&quot;</td>
<td>Segment contains value 'abc,123,xyz' (with commas)</td>
</tr>
</tbody>
</table>

When the comparison is to be performed on another field within the same segment and not a literal, the part of the condition to the right of the operands can specify a numeric field position with the record or a record layout field name.

**Example:**

<table>
<thead>
<tr>
<th>Conditions</th>
<th>Numeric Field Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>80(2) &gt; 84</td>
<td>Position 80-81 is greater than position 84-85.</td>
</tr>
<tr>
<td>STATE-CODE EQ PREV-STATE-CODE</td>
<td>Fields STATE-CODE and PREV-STATE-CODE are equal.</td>
</tr>
</tbody>
</table>

A condition to select segments based on the presence of a character string anywhere within a field uses the CO (contains) relational operator.

**Example:**

101(20) CO 'NEW YORK'—Looks for the character string anywhere in position 101-120.
When looking for a character string anywhere within a segment, you just require the literal specification.

**Example:**

C'NEW YORK' — Looks for 'NEW YORK' (upper case) anywhere in a segment.

C'new york' — Looks for 'new york' (lower case) anywhere in a segment.

C"100,00" — Looks for '100,00' (including comma anywhere in a segment.

'NEW YORK' or 'new york' — Looks for 'new york' (any case) anywhere in a segment.

X'FFFF' — Looks for a hex 'FFFF' anywhere in a segment.

P'0' — Looks for a packed zero (length 1 – 16) anywhere in a segment.

The starting point for the selection of segments can be specified by use of the STARTKEY keyword.

**Example:**

STARTKEY='56789' — Select IMS database records whose root key is equal to or greater than '56789'.

To limit the number of IMS database records read or processed for selection, the syntax is:

**Example:**

INLIM(n) — Stops reading and selecting IMS database records after reading n IMS database records

SELLIM(n) — Selects n IMS database records that match the specified selection criteria

**Note:** If SELLIM is greater than INLIM, processing stops after the INLIM value has been reached. If SELLIM is less than INLIM, processing stops when either the SELLIM or INLIM value is reached.

**Display mode**

Specifies the display mode.

**Values:**

C (Character Format) — Displays the segments in character format, as they appear in the database.

S (Single Record Format) — Displays segments in Single Record mode, one segment at a time, with the segment field names on the left and formatted data values on the right.

M (Multi-Record Format) — Displays multiple same-named segments at the same time, with the segment field names on the top of each column, and with each column containing a formatted display of the values of that field. Only same-named consecutive segments are displayed on the same panel.
If the segment's layout cannot be resolved, then CA File Master Plus for IMS will generate a segment layout and display the segment's data using it.

**Note:** You can change the display mode during the browse session by using the primary command that corresponds to the requested display mode; CHAR for character, SF for single record, and MF for multi-record.

3. Press Enter to validate the entries.

### Select PCBs

To select the PCBs, use the PCB Selection Panel screen.

**To select a PCB**

1. Select BROWSE from the Main Menu.
   
   The Browse IMS Database screen opens.

2. Complete the following fields, and press Enter.
   
   - IMS Environment
   - PSB or ACB name. The PCB Selection screen is only displayed when the PSB contains more than 1 PCB for the DBD name, if entered.

   The PCB Selection screen opens.

   ![PCB Selection Screen](image)

3. Specify S (Selects the database PCB and displays the Database DSN Specification screen) for the following fields:

   **PCB Type**

   Contains DB for all PCBs listed on the PCB Selection screen.

   **DBD Name**

   Identifies the DBD name associated with each PCB. The DBD name identifies the database to be processed if the PCB is selected. Only PCBs with DBDs that match the DBD Name in the Browse IMS Database screen are displayed.
Process Options

Indicates the permitted access types for the database. The process options displayed are the same as defined in the PSB source using the PROCOPT parameter on the PCB statement.

Values: A (All Access), G (Get Access (Read)), I (Insert), R (Replace), D (Delete), L (Load)

Note: Select a PCB with an appropriate PROCOPT for browsing a database.

Sensitive Segment Count

Indicates how many segments may be accessed using each PCB. The sensitive segment count is the same as the number of SENSEG statements for the PCB in the PSB source.

Secondary Processing Sequence

Defines the DBD name of the secondary index database for PCBs that access a database using a secondary index.

Selecting a PCB requests processing of the physical database specified in the DBD Name column using the secondary index database specified.

5. Press Enter to validate the entries.

Update DSNs

To update the DSNs, use the Database DSN Specification screen.

To update the DSN

1. Select BROWSE from the Main Menu.

   The Browse IMS Database screen opens.

2. Complete the following fields and press Enter.

   ■ IMS Environment
   ■ DBD Name

   The Database DSN Specification screen opens.

<table>
<thead>
<tr>
<th>Command ==&gt; Database DSN Specification</th>
<th>Row 1 to 2 of 2</th>
<th>Scroll ==&gt; CSR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specify DSN for each DDNAME</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

   IMS Environment          (Update from DSNs defined to IMS Env for changing DSNs ===> or from RESLIB Dyn Alloc Members)

   DBD Name    DDNAME    DSN

   DBDIVP    DBDIVP
   DBDIVPI    DBDIVPI

   ************************** End of Dataset List **************************
3. Complete the following fields:

**IMS Environment for changing DSNs**

Defines the default DSNs for the data sets associated with a database to a set of DSNs previously associated with the DBD name.

The DSNs for each ddname related to the main database and any primary and secondary index databases are used as the default DSNs. If the DSNs for the database are already associated with the IMS Environment specified in this field, the DSNs associated with the IMS environment are used as the default DSNs. If not, the dynamic allocation members from the RESLIB of the specified IMS Environment are used as the default DSNs.

**DBD Name**

Displays the DBD name associated with the database’s data sets.

The DBD name displayed on this screen is the DBD name of the main database and any related primary or secondary index databases.

**DDNAME**

Displays the ddname for the database’s data sets.

The ddnames are determined from the database definitions of the main database and any related primary or secondary index databases.

**DSN**

Defines the DSN for the database’s data sets. The DSN column contains the latest value for each ddname within the current IMS environment.

4. Press Enter or F3 to validate the entries.

5. Press Enter or F3 to continue.

**Note:** The Database DSN Specification screen opens when executing in a DLI environment to allow update of the DSNs for the ddnames associated with the browsed database.

When using a dynamic PSB, this screen opens. When using a static PSB, this screen opens when requested during PCB selection.

If you supply an IMS environment type of BMP on the Browse IMS Database panel, the Database DSN Specification screen does not appear. The database data sets defined to the BMP are used.
Select a Secondary Index Database View

This procedure describes how to select a secondary index database view from a list of secondary index database views defined for the primary database.

To select a secondary index database view

1. Select Browse from the Main Menu.
   The Browse IMS Database screen opens.
2. Complete the following fields, and press Enter.
   - **PSB or ACB Name**: Leave empty.
   - **DBD Name**: Type a valid DBD name for a primary DBD that has at least one secondary index view.
   - **Secondary Index**: Type Y.
   The Select Secondary Index Database screen opens.

<table>
<thead>
<tr>
<th>COMMAND ===&gt;</th>
<th>SCROLL ===&gt; CSR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary Database ===&gt; DBDIVP</td>
<td></td>
</tr>
<tr>
<td>Secondary Target   Source S Index  Segment Segment  Source Fields</td>
<td></td>
</tr>
<tr>
<td>DBDHID1S  MODEL FACILITY FCLTYNM</td>
<td></td>
</tr>
<tr>
<td>DBDHID1X  FACILITY SALES MONTH</td>
<td></td>
</tr>
<tr>
<td>************** End of Secondary Index Database List **************</td>
<td></td>
</tr>
</tbody>
</table>

3. Specify S (redisplays the DBD Name field populated with the value of the selected secondary index database definition and switches the secondary index value from Y to N) to the following fields:

   - **Primary Database**: Displays the DBD name of the database whose secondary index databases are listed on the selection screen.
     The DBD name in the Primary Database field is the same as the DBD Name field or it is the primary database related to the DBD name specified on the Browse IMS Database screen.

   - **Secondary Index**: Displays the DBD name of each of the secondary index databases related to the primary database.
Browse IMS Databases

Target Segment

Displays the segment name of the secondary index target for each secondary index database.

The target segment is a segment in the primary database that is directly accessed using the pointer from each segment in the secondary index database.

Note: The display of the database on the Browse screen presents the target segment as the level 1 segment (the root segment) even when the target segment is not the root of the physical database.

Source Segment

Displays IMS source segments as defined in the XDFLD statement in the physical database definition.

Source Fields

Displays the name of the segment in the primary database that contains the source fields for each secondary index.

The values in the source fields of the source segment contain the key of the secondary index database.

4. Choose which secondary index you want to use for browse processing by placing an S (redisplays the DBD Name field populated with the value of the selected secondary index database definition and switches the secondary index value from Y to N) to the left of the secondary index, and press Enter.

5. Press Enter to validate the entries.

The respective secondary index database view is selected for browsing.
Primary Database Hierarchical Display

The IMS segments appear as defined by the primary database hierarchy. A child segment is indented one character directly under its parent segment. Each lower hierarchical level is indented one position further than the previous hierarchical level up to the fifth level. After the fifth level and through the maximum level of 15, the level number appears in the leftmost segment name position, and the segment name continues being indented only four positions.

```
CA File Master Plus for IMS Browse DBD: DBDIVP                Columns 00001 00063
COMMAND ====> SCROLL ====> CSR
C Segment ------1--------2--------3--------4--------5--------6------
   STUDENT     00002SALLY PETERSON                      1223490 W. 73TH AVE.
    .SUBJECT   E442SR ENGLISH II                      30E441SR ENGLISH I   E4432R ENGLISH
   .TEACHER    SYLVIA ANDESEN                           PHD    E09182 MARY ELAINE ST. #6320
    .CLASS     040L15LLECTURE  0025
   .SUBJECT    H316US CIVIL WAR                         30
   .TEACHER    SAMUEL SANDERSON                         BS    H6B1860 BOOTH ST.
    .CLASS     02011L2LLECTURE  0025
   .HISTORY    09120017AB90SMITHVILLE HIGH SCHOOL       860-555-0823
    .TRANSCRIPT E201B30091
    .TRANSCRIPT E211B30091
    .TRANSCRIPT M561A40091
    .TRANSCRIPT P101A30091
    .TRANSCRIPT S101A40091
    .ATTEND     ..20010323SIYYY1
    .ATTEND     ..20010324SIYYY1
    .ATTEND     ..20011005SIYYY1
```  

Secondary Index View

CA File Master Plus for IMS uses the following rules when displaying the database using a secondary index’s view.

- The target segment becomes the database’s root segment.
- The parental path segments of the target segment appear as subordinate segments of the target segment.
- Subordinate segments to the target segment remain as subordinate segments of the target segment.
- Subordinate segments to the parental path segments exclude segment names that are displayed for the previous rules.
For example, if segment TEACHER is made the target segment, then the database displays according to this restructured hierarchy, as shown in the following panel:

```
CA File Master Plus for IMS Browse  DBD: DBDIVP            Columns 00001 00063
COMMAND ===>                                                  SCROLL ===> CSR
C  Segment  --------1---------2---------3---------4---------5---------6--------
   TEACHER   SUZANNE PETERSON       BS     A092364  HILL LN. APT A647
   ..SUBJECT X003STUDY HALL        00
   ..STUDENT 00001DAVID PERKINS    1221209 W. 75TH ST
   ..HISTORY 09120017AB98SMITHVILLE HIGH SCHOOL 860-555-0823
       ....TRANSCRIPT E201B30091
       ....TRANSCRIPT E211B30091
       ....TRANSCRIPT M561A40091
       ....TRANSCRIPT P101A30091
       ....TRANSCRIPT S101A40091
       ....ATTEND   ..20010323SIIYY1
       ....ATTEND   ..20010324SIIYY1
       ....ATTEND   ..20010325SIIYY1
       ....ATTEND   ..20011005SIIYY1
   ...HISTORY 09220027CV14PLATTE CITY HIGH SCHOOL 310-555-1981
       ....TRANSCRIPT E202C30091
       ....TRANSCRIPT E212A30091
       ....TRANSCRIPT M562B40091
```

### Browse Primary and Line Commands

For a complete list and descriptions of the Primary and Line commands available while browsing an IMS Database, see the Editing IMS Database chapter.

Primary and Line commands that modify data are not supported while browsing a database.
Chapter 6: Editing IMS Databases

This chapter describes how you can edit IMS databases. Edit supports the following databases types:

- DEDB (Fast Path)
- HDAM
- HIDAM
- HISAM
- MSDB (Fast-path)
- PHDAM
- PHIDAM
- PSINDEX
- SHISAM
- Logical Database
- Secondary Index

This section contains the following topics:

- Edit IMS Databases (see page 64)
- Edit Commands (see page 82)


Edit IMS Databases

You use the Edit IMS Database screen to edit databases.

To edit an IMS database

1. Select Edit from the Main Menu.

The Edit IMS Database screen opens.

<table>
<thead>
<tr>
<th>COMMAND ====&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>IMS Database to Edit:</td>
</tr>
<tr>
<td>IMS Environment ===&gt; ________ (if static PSB being used)</td>
</tr>
<tr>
<td>PSB or ACB Name ===&gt; ________ (optional if PSB Name specified)</td>
</tr>
<tr>
<td>DBD Name ===&gt; ________ (if a wildcard)</td>
</tr>
<tr>
<td>Secondary Index ===&gt; N ('Y' for Secondary Index list)</td>
</tr>
</tbody>
</table>

Record Layout for Formatted Displays:

| Layout dataset ===> |
| CRL dataset ===> |

Selection Criteria below or Selection Criteria Member ===> 

Display mode ===> C (C Character S Single-rec Format M Multi-rec Format)

2. Complete the following fields:

IMS Environment

Defines the IMS environment used to resolve various processing parameters while editing an IMS database. The name of an IMS environment corresponds to a member name within the IMS environment Parm PDS that is updated using option 0.5.

The IMS environment is defined as a DLI or a BMP environment. The type of IMS environment specifies whether the edit process is executed in DLI mode or within a BMP region.

This IMS environment can also be a wildcard.
**PSB or ACB Name**

Defines the PSB or ACB Name. If blank, a dynamic PSB for DLI or a dynamic ACB for BMP is generated.

In a DLI environment, the specified PSB name must be a member in a data set within the PSBLIB concatenation specified in the current IMS Environment.

In a BMP environment, the specified ACB name must be a member in a data set within the ACBLIB concatenation specified in the current IMS Environment.

To process a secondary index as a separate database you must provide a PSB or ACB in which the selected PCB's DBDNAME parameter specifies the index DBDNAME.

These names can also be a wildcard.

**Note:** You see the No I/O PCB Present Warning screen whenever the Edit Request screen specifies a static ACB or PSB, and the specified ACB or PCB does not have an I/O PCB. Without an I/O PCB, the editor cannot invoke IMS to perform a checkpoint or a rollback, so the editor is unable to support the SAVE, ROLLBACK, and CANCEL primary commands.

---

**WARNING**

The PSB specified for this edit session does not include an I/O PCB. If you proceed to edit without an I/O PCB present, commands SAVE, CANCEL, and ROLLBACK will not be available.

ENTER to continue to edit session
CANCEL to return to Edit Request Screen

Without the SAVE, ROLLBACK, and CANCEL commands, the following rules apply:

- You cannot reverse an update with the CANCEL or ROLLBACK command.
- All updates are applied when the edit session is exited.
- You cannot use the SAVE command to commit updates and free resource locks during the edit session.

The No I/O PCB Present Warning screen warns of the limitations of an edit session without an I/O PCB. It provides an opportunity to return to the Edit Request screen to initiate an edit to:

- Use a static ACB or PSB that has an I/O PCB.
- Use a dynamic ACB or PCB (which always has an I/O PCB).
When you do not specify a PSB or ACB name, a dynamic ACB or PSB is generated that has all processing options for all segments and all fields. Most of the time the dynamic ACB or PSB gives the functionality you want and is easier to use. The static ACB or PSB should be necessary only for situations in which you want to limit the processing options or want field-level sensitivity.

**DBD Name**

Defines the DBD name to indicate the database for editing. The DBD name must be a member in a data set within the DBDLIB concatenation specified in the current IMS Environment.

This name can also be a wildcard.

**Secondary Index**

Entering a Y lets you view a list of associated secondary indexes for the supplied DBD Name. The PSB or ACB Name field must be blank. (When the PSB or ACB Name field is omitted, CA File Master Plus for IMS generates a dynamic PSB to access the database.)

When this field is Y, you see the Select Secondary Index Database screen that lets you select the desired secondary index view from a list of secondary index databases for the database specified in the DBD Name field. After you have selected a secondary index database, the secondary index DBD Name replaces the value in the DBD Name field.

To use a secondary index with a static PSB, or if no secondary index processing is required, enter N (for no) in this field.

**Layout Dataset**

Defines the DSN of the record layout data set that contains layouts for segments in this database.

You can enter a wildcarded DSN or a DSN list specification to help locate the DSN you want.

Enter 'FMCONCAT' to select the DSNList that contains the layout concatenations if the layouts are in different PDSs.

**Note:** For more information about creating concatenated PDSs, see the chapter "Working with the DSNList Directory."
CRL Dataset

Defines the optional value to edit the data base using a CRL. This data set must contain CRLs that match the segment names defined in the DBD. The segments that share the same-named CRLs are used.

The CRLs are not used for selection; they display the selected segments according to the CRL definition.

You can enter a wildcarded DSN or a DSN list specification to help locate the DSN you want. Enter an exclamation mark (!) after the name if you want the wildcarded DSN saved for your next session. If you do not enter an exclamation mark after the name, the data set you pick from the selection list is saved.

Selection Criteria or Selection Criteria Member

Specifies the selection criteria to filter the IMS database records of the input database. Dynamic Selection is entered free form. If a Selection Criteria Member is used, then this member must be defined in the Selection Criteria PDS, defined in option 0.3, Define and Update ProcessingParms. You define the actual Selection Criteria Member using option 5, Define or Update a Selection Criteria. The Selection Criteria Member value can also be a wildcard.

The selection criteria are used to specify a filter based on the following types of parameters:

- Condition that evaluates data values in each segment
- Presence of a character string within a segment or specified columns or field name from a record layout
- Limit to the number of IMS database records to be selected
- Use of a cataloged selection criteria parameter member defined using CA File Master Plus for IMS Option 0.3, Define and Update ProcessingParms or Option 5 Filter.
- To assist in the entry of the selection, use the LAYOUT[ROOT|segname] command. When this is entered on the command line, a screen with the ROOT's or segname's copybook is displayed. Enter the selection criteria on that screen. If the optional parameter is omitted, a screen with the database's segments is displayed, from which you can select the appropriate segment.

<table>
<thead>
<tr>
<th>Selection Criteria</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>IFREC(segname)</td>
<td>Qualifies subsequent selection criteria to a specific IMS database record. If no IFREC or IFSEG is specified, dynamic selection criteria applies to the ROOT segment. The selected segment along with its entire IMS database record is returned.</td>
</tr>
</tbody>
</table>
### Selection Criteria

<table>
<thead>
<tr>
<th>Description</th>
<th>Selection Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Qualifies subsequent selection criteria to a specific database segment. If no IFREC or IFSEG is specified, dynamic selection criteria applies to the ROOT segment. When the segment matches the selection criteria, the segment is selected, along with its children, and all of the segments in its parental path. All children of the segments in the parental path are also selected. No twins of the selected segment or twins of any of the segments in the parental path will be selected, or any of their children. (Twins have the same segment name and exact same parent segment). In addition, the rest of the IMS database record will be selected. Only the segments that make up the parental path will be displayed. You can see the all other segments that were selected by entering the SEGMENT * command.</td>
<td>IFSEG(\textit{segname})</td>
</tr>
<tr>
<td>'TEXAS' in any case anywhere in the segment.</td>
<td>'TEXAS'</td>
</tr>
<tr>
<td>Character string 'TEXAS' anywhere in the segment.</td>
<td>C'TEXAS'</td>
</tr>
<tr>
<td>Position 80 – 81 of any segment equals 'NY'.</td>
<td>80 EQ C'NY'</td>
</tr>
<tr>
<td>Field STATE-CODE not equal 'NY' (requires LAYOUT info)</td>
<td>STATE-CODE NE 'NY'</td>
</tr>
<tr>
<td>Field STATE-CODE equal to 'NY' or 'TX'.</td>
<td>STATE-CODE = C'NY' C'TX'</td>
</tr>
<tr>
<td>Position 80-81 equals 'NY' or 'TX' AND.</td>
<td>80 = C'NY,TX' AND</td>
</tr>
<tr>
<td>Position 100-106 of any segment equals '100,000'.</td>
<td>100 = C&quot;100,000&quot;</td>
</tr>
<tr>
<td>Note: Quotes are required when the search string contains a comma.</td>
<td></td>
</tr>
<tr>
<td>Field TRAND-DD is either '02', '03', '04' or '05'.</td>
<td>TRAN-DD GT '01' AND TRAN-DD LT '06'</td>
</tr>
<tr>
<td>Position 10-13 of any segment is a valid packed value.</td>
<td>10(4) EQP</td>
</tr>
<tr>
<td>Position 21 of any segment is a packed '0'.</td>
<td>21 = P'0'</td>
</tr>
<tr>
<td>Position 100-101 of any segment is either P'0', P'1', or P'999'.</td>
<td>100(2) = P'0,1,999'</td>
</tr>
<tr>
<td>'NEW YORK' in any case of any segment is found anywhere in position 101-120.</td>
<td>101(20) CO 'NEW YORK'</td>
</tr>
<tr>
<td>Start segment selection with the root segment whose key is GTEQ to '56789'.</td>
<td>STARTKEY='56789'</td>
</tr>
<tr>
<td>Stop reading/selection after reading 5000 IMS database records.</td>
<td>INLIM=5000</td>
</tr>
<tr>
<td>Only select 1000 IMS database records which match the specified selection criteria.</td>
<td>SELLIM=1000</td>
</tr>
<tr>
<td>Compound condition (OR also supported).</td>
<td>80 = C'NY' AND 100 = C'001'</td>
</tr>
<tr>
<td>Compound condition with fields.</td>
<td>STATE-CODE EQ C'NY' AND COUNTY-CODE EQ C'001'</td>
</tr>
</tbody>
</table>
### Selection Criteria

<table>
<thead>
<tr>
<th>Valid condition relational operators</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>= or EQ</td>
<td>Equal</td>
</tr>
<tr>
<td>EQP</td>
<td>Equal packed value</td>
</tr>
<tr>
<td>EQN</td>
<td>Equal numeric value</td>
</tr>
<tr>
<td>^= or NE</td>
<td>Not equal</td>
</tr>
<tr>
<td>NEP</td>
<td>Not equal packed value</td>
</tr>
<tr>
<td>NEN</td>
<td>Not equal numeric value</td>
</tr>
<tr>
<td>&gt; or GT</td>
<td>Greater than</td>
</tr>
<tr>
<td>&gt;= or GE</td>
<td>Greater than or equal</td>
</tr>
<tr>
<td>&lt; or LT</td>
<td>Less than</td>
</tr>
<tr>
<td>&lt;= or LE</td>
<td>Less than or equal</td>
</tr>
<tr>
<td>CO</td>
<td>Contains (that is, the specified literal is anywhere within the scan length or field)</td>
</tr>
</tbody>
</table>

Multiple literals may be specified by listing the literals or by listing the literal values within apostrophes separated by a comma. Following are some examples of conditions with multiple literal values.

### Conditions

<table>
<thead>
<tr>
<th>Conditions</th>
<th>Multiple Literal Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>80 = C'NY' C'NJ' C'MA'</td>
<td>Segment position 80-81 equals one of the three values.</td>
</tr>
<tr>
<td>80 = C'NY,NJ,MA'</td>
<td>Segment position 80-81 equals one of the three values.</td>
</tr>
<tr>
<td>80 = C&quot;NY,NJ,MA&quot;</td>
<td>Segment position 80-97 equals C'NY,NJ,MA' (with commas).</td>
</tr>
<tr>
<td>100(2) = P'0,1,999'</td>
<td>2-byte packed field in segment position 100 equals one of the three values.</td>
</tr>
<tr>
<td>'abc,123,xyz'</td>
<td>Segment contains one of the three values.</td>
</tr>
<tr>
<td>&quot;abc,123,xyz&quot;</td>
<td>Segment contains value 'abc,123,xyz' (with commas).</td>
</tr>
</tbody>
</table>

When the comparison is to be performed on another field within the same segment and not a literal, the part of the condition to the right of the operands can specify a numeric field position with the record or a record layout field name.

**Example:**

<table>
<thead>
<tr>
<th>Conditions</th>
<th>Numeric Field Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>80(2) &gt; 84</td>
<td>Position 80-81 is greater than position 84-85.</td>
</tr>
<tr>
<td>STATE-CODE EQ, PREV-STATE-CODE</td>
<td>Fields STATE-CODE and PREV-STATE-CODE are equal.</td>
</tr>
</tbody>
</table>
A condition to select segments based on the presence of a character string anywhere within a field uses the CO (contains) relational operator.

**Example:**

101(20) CO 'NEW YORK'—Looks for the character string anywhere in position 101-120.

When looking for a character string anywhere within a segment, you require only the literal specification.

**Example:**

C'NEW YORK'—Looks for 'NEW YORK' (uppercase) anywhere in a segment.

C'new york'—Looks for 'new york' (lowercase) anywhere in a segment.

C'100,00'—Looks for '100,00' (including comma anywhere in a segment).

'NEW YORK' or 'new york'—Looks for 'new york' (any case) anywhere in a segment.

X'FFFF'—Looks for a hex 'FFFF' anywhere in a segment.

P'0'—Looks for a packed zero (length 1 – 16) anywhere in a segment.

N'5'—When a field name is provided, it looks for X'05' for a binary field, P'S' for a packed field, and N'S' for a numeric display field. Without a field name it looks for N'S'.

You can specify the starting point for the selection of segments using the STARTKEY keyword.

**Example:**

STARTKEY='56789'—Selects IMS database records whose root key is equal to or greater than '56789'

To limit the number of IMS database records read or processed for selection, the syntax is:

**Example:**

INLIM(n)—Stops reading and selecting IMS database records after reading n IMS database records

SELLIM(n)—Selects n IMS database records that match the specified selection criteria

**Note:** If SELLIM is greater than INLIM, processing stops after the INLIM value has been reached. If SELLIM is less than INLIM, processing stops when either the SELLIM or INLIM value is reached.
Display Mode

Specifies the display mode.

Values:

C - (Character Format)—Displays the segments in character format, as they appear in the database.

S - (Single Record Format)—Displays segments in Single Record mode, one segment at a time, with the segment field names on the left and formatted data values on the right.

M - (Multi-Record Format)—Displays multiple same-named segments at the same time, with the segment field names on the top of each column, and with each column containing a formatted display of the values of that field. Only same-named consecutive segments are displayed on the same panel.

If the segment’s layout cannot be resolved, then CA File Master Plus for IMS generates a segment layout to display the segment’s data.

Note: You can change the display mode during the edit session by using the primary command that corresponds to the display mode you want: CHAR for character, SF for single record, or MF for multi-record.

Press Enter to validate the entries.

Save Data when the Change Log Function is Active

The Change Log was activated for an edit session because the IMS Environment member being used for the edit session specifies a number of primary cylinders for the Change Log file that is greater than 0. For a description of setting the Change Log parameters, see the section IMS Environments in the chapter “Setting Environmental Parameters for Processing.”

When the edit Change Log function is active, the Change Log Dataset Processing screen displays at the end of an edit session. With this screen you can select various options, including options for printing the file.
To save data when the Change Log function is active

1. Choose one of the following options to determine what you would like to do with the data set.

```
-------- CA File Master Plus for IMS -- Change Log Dataset Processing---
Command ==> 
Select one of the following options ===> 
P. Print dataset (add to same dataset in next session)
PD. Print dataset and delete
D. Delete dataset without printing
K. Keep dataset (add to same data set in next session)
KN. Keep dataset (allocate new data set in next session)

Log dataset: USERID.FMIMS.CHANGE.L0000001
Description of Change: ____________________________________________________________________
____________________________________________________________________

ENTER or PF3 to proceed
```

Option P:

Indicates that the Change Log data set is printed according to the specifications in the Change Log Dataset Print Options screen which is displayed next. The Change Log data set is opened as DISP=MOD for the next edit session and all Change Log recording is added to the existing data set for any future edit session.

Option PD:

Indicates that the Change Log data set is printed according to the specifications in the Change Log Dataset Print Options screen which is displayed next. After printing has completed, the Change Log data set is deleted and a new Change Log data set is allocated in the next edit session using the same data set name. The action is unavailable when Change Log is activated by your CA File Master Plus for IMS administrator.

Option D:

Indicates that the Change Log data set is deleted and a new Change Log data set with the same name is allocated in the next edit session. The Change Log Print Options screen is not displayed and no printing is done. The action is unavailable when Change Log is activated by your CA File Master Plus for IMS administrator.

Option K:

Indicates that the Change Log data set is saved and opened as DISP=MOD for the next edit session and all Change Log recording is added to the existing data set. The Change Log Print Options screen is not displayed and no printing is done.
Option KN:

Indicates that the Change Log data set is kept and a new Change Log data set is allocated in the next edit session. When the new data set is allocated and the CAWKOPTONL_CLOGDSN definition contains the %LOGN variable the LOG number \textit{nnnnnnn} is incremented by 1 in the data set name. The Change Log Print Options screen is not displayed and no printing is done.

\textbf{Note:} For more information about the CAWKOPTONL_CLOGDSN parameter, see the "CAWKOPT Installation Options Macro" section in the File Master Plus for IMS Installation Guide.

Log dataset:

Identifies the Change Log data set name that is currently in use. The format of the name is defined by CAWKOPT_ONL_CLOGDSN.

\textbf{Note:} For more information about the CAWKOPTONL_CLOGDSN parameter, see the "CAWKOPT Installation Options Macro" section in the File Master Plus for IMS Installation Guide.

Description of Change:

Identifies three optional description lines supplied by you to describe the activity for this session. This three-line description is displayed on all printed reports for this data set.

If you select Print data set (options P or PD), the Change Log Dataset Print Options screen opens.

\begin{verbatim}
------------------
| Change Log Dataset Print Options |
------------------

Log data set: USERID.FMIMS.CHANGE.L0000001

Print Options:
Sysout class           ==> *
Number of copies       ==> 1

Enter One of the Following to Control Print Destination (Optional):
Destination printer   ==> 
OR External JES node   ==> 
Userid at JES node     ==> 
OR Sysout writer name  ==> 
OR Print dataset name  ==> 
Dataset disposition    ==> (NEW, SHR, or MOD)

PRINTLOG Format:
Print Format           ==> C  C = Character   H = Hex  S = Single Record formatted
Field Display          ==> A  A = All Fields M = Mismatched fields

ENTER or END to proceed
\end{verbatim}
2. Override any of the following fields which were defined in the Print Output Control parms in Setup option 0.2.

**Sysout Class**

Defines the one-position sysout class where the print output is routed. This field corresponds to the SYSOUT= JCL parameter.

*Values: * *, A to Z, and 0 to 9*

**Number of copies**

Defines the number of printed copies. This field corresponds to the COPIES= JCL parameter.

*Values: 1 to 255*

**Destination printer**

Defines the printer ID of a local or remote printer where print output will be routed. This field corresponds to the JCL parameter DEST=.

*Values: One of the following formats: Rnnnn, RMnnnn, or RMTnnnn (where nnnn is the one- to four-digit remote printer ID).*

**External JES node and Userid at JES node**

Defines the external JES node and user ID at the JES node to route print output to a specified user ID within an external node.

These fields operate like the DEST=(nnnnnn,uuuuuu) JCL parameter (where nnnnnn is JES Node ID and uuuuuu is a user ID).

**Sysout writer name**

Defines the member name of the writer program when you want print handled by a sysout writer program. This program is a started task that gets control for each output record and performs user-defined processing to manipulate and route the print file.

This field corresponds to the SYSOUT=(c,wwwwww) JCL parameter (where c is the Sysout Class and wwwwwww is the name of the Sysout Writer Program).

**Print dataset name**

Defines the data set name where the print is to be routed.

*Note: Use of this parameter causes the print to be written to the specified data set instead of being written to a Sysout class.*

**Dataset disposition**

Specifies the data set disposition.

*Values: NEW (Create a new data set), SHR (Overlay existing data), MOD (Append print to the data set’s current data)*
3. Specify the print format and the type of field display using the following fields:

**Print Format**
Controls the formatting of the segment's data.

- **CHARACTER or C**
  Character print of the selected segments, with scale and segment numbers. C is the default value.

- **HEX or H**
  Hex print of the selected segments in Vertical Hex Format

- **SINGLE or S**
  Single print of the selected segments in layout format

**Field Display**
Controls the amount of fields or 100 byte areas of a segment to display.

- **A**
  Displays all of the mismatched segment's fields or areas in the segment.

- **M**
  Displays only the segment's changed fields in formatted mode or each 100 byte area of a segment that was changed in character or hex modes.

### Select PCBs

To select the PCBs, use the PCB Selection screen.

**To select a PCB**

1. Select EDIT from the Main Menu.
   The Edit IMS Database screen opens.
2. Complete the following fields, and press Enter.
   - **IMS Environment**
   - **PSB or ACB name.** The PCB Selection screen is only displayed when the PSB contains more than 1 PCB for the DBD name, if entered.
The PCB Selection screen opens.

<table>
<thead>
<tr>
<th>Command</th>
<th>PCB Selection</th>
<th>Scroll =&gt; CSR</th>
</tr>
</thead>
<tbody>
<tr>
<td>S</td>
<td>Select Database to Process</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sensitive</th>
<th>Secondary</th>
</tr>
</thead>
<tbody>
<tr>
<td>PCB</td>
<td>DBD</td>
</tr>
<tr>
<td>Type</td>
<td>Name</td>
</tr>
<tr>
<td>Options</td>
<td>Count</td>
</tr>
<tr>
<td>Sequence</td>
<td></td>
</tr>
</tbody>
</table>

---

3. Specify S (Selects the database PCB and displays the Database DSN Specification screen) for the following fields:

**PCB Type**

Contains DB for all PCBs listed on the PCB Selection screen.

**DBD Name**

Identifies the DBD name associated with each PCB. The DBD name identifies the database to be processed if the PCB is selected. Only PCBs with DBDs that match the Edit IMS Database screen's DBD Name will be displayed.

**Process Options**

Indicates the permitted access types for the database. The process options displayed are the same as defined in the PSB source using the PROCOPT parameter on the PCB statement.

**Values:** A (All Access), G (Get Access (Read)), I (Insert), R (Replace), D (Delete), L (Load)

**Note:** Select a PCB with an appropriate PROCOPT for editing a database.

**Sensitive Segment Count**

Indicates how many segment names may be accessed using each PCB. The sensitive segment count is the same as the number of SENSEG statements for the PCB in the PSB source.

**Secondary Processing Sequence**

Defines the DBD name of the secondary index database for PCBs that access a database using a secondary index.

Selecting a PCB requests processing of the physical database specified in the DBD Name column using the secondary index database specified.

4. Press Enter to validate the entries.
Update DSNs

To update the DSNs, use the Database DSN Specification screen.

To update the DSNs

1. Select Edit from the Main Menu.
   The Edit IMS Database screen opens.
2. Complete the following fields, and press Enter.
   - IMS Environment
   - DBD Name
   The Database DSN Specification screen opens.

   ![Database DSN Specification screen]

   **Note:** The Database DSN Specification screen opens when executing in a DLI environment to allow update of the DSNs for the ddnames associated with the edited database.

   When using a dynamic PSB, this screen opens. When using a static PSB, this screen opens when requested during PCB selection.

   If you supply an IMS environment type of BMP on the Edit IMS Database screen, the Database DSN Specification screen does not appear. The database data sets defined to the BMP are used.

3. Complete the following fields:

   **IMS Environment for changing DSNs**

   Defines the default DSNs for the data sets. The data sets associate a database to a set of DSNs that were previously associated with the DBD name.

   The DSNs for each ddname related to the main database and any primary and secondary index database are used as the default DSNs. If the DSNs for the database are already associated with the IMS Environment specified in this field, the DSNs associated with the IMS environment are used as the default DSNs. If not, the dynamic allocation members from the RESLIB of the specified IMS Environment are used as the default DSNs.
DBD Name
Displays the DBD name associated with the database's data sets.
The DBD name(s) displayed on this screen is the DBD name of the main database and any related primary or secondary index databases.

DDNAME
Displays the ddname for the database's data sets.
The ddnames are determined from the database definitions of the main database and any related primary or secondary index databases.

DSN
Defines the DSN for the database's data sets. The DSN column contains the latest value for each ddname within the current IMS environment.

4. Press Enter to validate the new entries.
5. Press Enter to continue.

Select a Secondary Index Database View
This procedure describes how to select a secondary index database view from a list of secondary index database views defined for the primary database.

To select a secondary index database view
1. Select Edit from the Main Menu.
The Edit IMS Database screen opens.
2. Complete the following fields, and press Enter.
   PSB or ACB Name
   Leave empty.
   DBD Name
   Type a valid DBD name for a primary DBD that has at least one secondary index view.
   Secondary Index
   Type Y.
The Select Secondary Index Database screen opens.

<table>
<thead>
<tr>
<th>COMMAND =&gt;</th>
<th>SCROLL =&gt;</th>
<th>CSR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary Database =&gt; DBDIVP</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Secondary Index</th>
<th>Target Segment</th>
<th>Source Segment</th>
<th>Source Fields</th>
</tr>
</thead>
<tbody>
<tr>
<td>DBDHID1S</td>
<td>MODEL</td>
<td>FACILITY</td>
<td>FCLTYNM</td>
</tr>
<tr>
<td>DBDHID1X</td>
<td>FACILITY</td>
<td>SALES</td>
<td>MONTH</td>
</tr>
</tbody>
</table>

************** End of Secondary Index Database List **************

3. Specify S (redisplays the DBD Name field populated with the value of the selected secondary index database definition and switches the secondary index value from Y to N) to the following fields:

**Primary Database**

Displays the DBD name of the database whose secondary index databases are listed on the selection screen.

The DBD name in the Primary Database field is the same as the DBD Name field or it is the primary database related to the DBD name specified on the Edit IMS Database screen.

**Secondary Index**

Displays the DBD name of each of the secondary index databases related to the primary database.

**Target Segment**

Displays the segment name of the secondary index target for each secondary index database.

The target segment is a segment in the primary database that is directly accessed using the pointer from each segment in the secondary index database.

**Note:** The display of the database on the Edit IMS Database screen shows the target segment as the level 1 segment (that is, the root segment) even when the target segment is not the root of the physical database.

**Source Segment**

Displays the IMS source segments as defined in the XDFLD statement in the physical database definition.
Source Fields

Displays the name of the segment in the primary database that contains the source fields for each secondary index.

The values in the source fields of the source segment contain the key of the secondary index database.

4. Press Enter to validate the entries.

The respective secondary index database view is selected for editing.

Primary Database Hierarchical Display

The IMS segments appear as defined by the primary database hierarchy. A child segment is indented one character directly under its parent segment. Each lower hierarchical level is indented one position further than the previous hierarchical level up to the fifth level. After the fifth level and through the maximum level of 15, the level number appears in the leftmost segment name position, and the segment name continues to be indented only four positions.
Secondary Index View

CA File Master Plus for IMS uses the following rules when displaying the database using a secondary index's view:

- The target segment becomes the database's root segment.
- The parental segments of the target segment are displayed as a subordinate segment of the target segment.
- Subordinate segments to the target segment remain as subordinate segments of the target segment.
- Subordinate segments to the parental path segments exclude segment names that are displayed according to the previous rules.

For example, if segment TEACHER is made the target segment, then the database displays according to this restructured hierarchy:

<table>
<thead>
<tr>
<th>CA File Master Plus for IMS Edit DBD: DBDIVP</th>
<th>Columns 00001 00063</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMMAND ====&gt;</td>
<td>SCROLL ====&gt; CSR</td>
</tr>
<tr>
<td>C Segment</td>
<td></td>
</tr>
<tr>
<td>----</td>
<td></td>
</tr>
<tr>
<td>+----</td>
<td></td>
</tr>
<tr>
<td>1----</td>
<td></td>
</tr>
<tr>
<td>+----</td>
<td></td>
</tr>
<tr>
<td>2----</td>
<td></td>
</tr>
<tr>
<td>+----</td>
<td></td>
</tr>
<tr>
<td>3----</td>
<td></td>
</tr>
<tr>
<td>+----</td>
<td></td>
</tr>
<tr>
<td>4----</td>
<td></td>
</tr>
<tr>
<td>+----</td>
<td></td>
</tr>
<tr>
<td>5----</td>
<td></td>
</tr>
<tr>
<td>+----</td>
<td></td>
</tr>
<tr>
<td>6----</td>
<td></td>
</tr>
<tr>
<td>---</td>
<td></td>
</tr>
</tbody>
</table>
| ___TEACHER__SUZANNE PETERSON__BS__A092364__HILL LN. APT A647__
| ___ SUBJECT__X003STUDY HALL__00__
| ___STUDENT__00001DAVID PERKINS__1221209 W. 75TH ST__
| ___HISTORY__09120017AB00SMITHVILLE HIGH SCHOOL__1860-555-0823__
| ___TRANSCRIPT E201B30091__
| ___TRANSCRIPT E211B30091__
| ___TRANSCRIPT M561A40091__
| ___TRANSCRIPT P101A30091__
| ___TRANSCRIPT S101A40091__
| ___ATTEND__..20010323SIYY1__
| ___ATTEND__..20010324SIYY1__
| ___ATTEND__..20010325SIYY1__
| ___ATTEND__..20011005SIYY1__
| ___HISTORY__09220027C14PLATTE CITY HIGH SCHOOL__310-555-1981__
| ___TRANSCRIPT E202C30091__
| ___TRANSCRIPT E212A30091__
| ___TRANSCRIPT M562B40091__

Secondary Index Edit restriction

A secondary index target segment cannot be inserted into, or deleted from, the database. This restriction is also true for a segment in the physical parental path of the secondary index target segment.
Edit Commands

The CA File Master Plus for IMS data editor supports primary commands and line commands to perform data searching and manipulation during your edit session.

- Primary commands are entered on the (Command ===>) line and are performed against the selected segments. Primary commands support all format modes.

- Line commands are specified in the two-position line command field, and support only the character and Multi Record modes. To enter line commands that exceed two characters, continue typing into the Segment Name field. Line commands are performed against a single line or a block of lines for which the line command was entered.

The following sections provide an alphabetical listing of the primary commands and line commands available when using the CA File Master Plus for IMS data editor.

Primary Commands

This section describes the primary commands for CA File Master Plus for IMS.

AUTOCOMMIT

Sets the EDIT AUTOCOMMIT profile setting to either ON or OFF. To view the current AUTOCOMMIT setting, use the PROFILE command.

Note: COMMIT requires the presence of an I/O PCB in the PSB selected for use when editing the database. If there is no I/O PCB present, the COMMIT is rejected, locks continue to be held, and updates are not committed.

Note: The AUTOCOMMIT primary command is still available to users even if they are disallowed changing the AUTOCOMMIT setting in the PROFILE window in an Edit session. The AUTOCOMMIT setting is then not saved when the user exits the Edit session.

Syntax:

AUTOCOMMIT [ON|OFF]
Syntax Description:

**ON**

Sets the EDIT AUTOCOMMIT profile setting to ON. All outstanding updates are saved when you press Enter.

**Warning:** The edit commands, CANCEL and ROLLBACK, are not available when AUTOCOMMIT is set to ON.

**OFF**

Sets the EDIT AUTOCOMMIT profile setting to OFF. No outstanding updates are saved until you either explicitly or implicitly enter the SAVE or COMMIT command.

**Default:** OFF

### AUTOSAVE

Sets autosaving of uncommitted database changes when the END command is processed. If autosaving is off, you must specify the SAVE command to save any uncommitted changes made to the data set during the edit session, or CANCEL to cancel the edit session without saving uncommitted database changes. You can also view and reset your current AUTOSAVE value by specifying the PROFILE command.

If AUTOCOMMIT = YES is specified in your edit profile, AUTOSAVE = OFF will not prompt you to enter a SAVE or CANCEL command when the END command is processed.

**Syntax:**

```plaintext
AUTOSAVE   [ON|OFF]
```

**Syntax Description:**

**ON**

Sets the EDIT AUTOSAVE profile setting to ON. When END is entered any outstanding (uncommitted) updates are saved.

**OFF**

Sets the EDIT AUTOSAVE profile setting to OFF. When you enter END, you will be prompted to specify SAVE or CANCEL. This is the default value.

### BOTTOM

Jumps to the last segment in the database.

**Alias:** B
BOUNDS

Sets the left and right boundaries for subsequent commands.

Syntax:

BOUNDS [lmargin [rmargin]]

Syntax Description:

lmargin
  Column number for left boundary/margin.

rmargin
  Column number for right boundary/margin.

Note: When no sub-commands are entered, then the BOUNDS command resets the left
and right margins to position 1 for the left margin, and the last position of the largest
segment position for the right margin.

To view the current BOUNDS setting, insert a BOUNDS line by entering the line
command BNDS under the column C.

Alias:   BNDS, BND

BROWSE

Switches the current Edit session to a Browse session.

CANCEL

Terminates the CA File Master Plus for IMS Edit session without saving any outstanding
updates.

Note: CANCEL requires the presence of an I/O PCB in the PSB selected for use when
editing the database. The dynamic PSBs generated by CA File Master Plus for IMS always
contain an I/O PCB.

If no I/O PCB is present, all changes made during the editing session are retained, and
the CANCEL command cannot be used to exit without saving your changes.

Alias:   CAN
CAPS

Sets the EDIT CAPS profile setting to ON or OFF. To view the current CAPS setting, use the PROFILE command.

Syntax:
CAPS [ON|OFF]

Syntax Description:

ON
Sets the EDIT CAPS profile setting to ON, which converts all inserted alphabetic characters to uppercase.

OFF
Sets the EDIT CAPS profile setting to OFF, which does not convert inserted alphabetic characters to uppercase. This is the default value.

Note: The conversion to uppercase characters while overtyping data with CAPS ON will not convert any lowercase characters that are not currently displayed on the screen, or any lowercase characters that are separated from the overtyped characters by a non-printable character.

CHANGE

Changes one string to another. For more details on changing to or from strings of different lengths, see the section Change Command "From" and "To" Character Strings of Different Lengths later in this chapter.

Syntax:
CHANGE fromstr tostr [FIRST|LAST|NEXT|PREV|ALL] [WORD|PREFIX|SUFFIX|CHAR] [label1 label2] [lcol rcol] [[SEGMENT]segname] [CHILD|CURR|REC]

Syntax Description:

fromstr
Specifies the 'from' string. This can be a simple character string, with or without quotes; a character string specified as C'ccc'; a text string specified as T'ccc'; a hex string specified as X'xx'; or a packed-decimal expression specified as P'y' or PL'vvv'. For more information, see Rules for finding packed strings on the FIND Command later in this chapter.
**tostr**

Specifies the 'to' string. This can be a simple character string, with or without quotes; a character string specified as C'ccc', a text string specified as T'ccc', a hex string specified as X'xx', or a packed-decimal expression specified as P'y' or PLn'vvv'.

**FIRST**

Starts search at the beginning of the IMS database, and changes only the first occurrence of *fromstr*.

**LAST**

Changes the last occurrence of the *fromstr* in the database.

**NEXT**

Starts from the current cursor position, and changes the next occurrence of *fromstr*. This is the default value.

**PREV**

Starts from the current cursor position, and changes the previous occurrence of *fromstr*.

**ALL**

Changes all occurrences of *fromstr* to *tostr*.

**WORD**

Specifies that *fromstr* should match only complete words.

**PREFIX**

Specifies that *fromstr* should match only strings at the beginning of words.

**SUFFIX**

Specifies that *fromstr* should match only strings at the end of words.

**CHAR**

Specifies that *fromstr* should match regardless of word status. This is the default value.

**label1**

Specifies the first end point in a range of lines to which the CHANGE command should be restricted.

**label2**

Specifies the second end point in a range of lines to which the CHANGE command should be restricted.
**Edit Commands**

**Chapter 6: Editing IMS Database**

**Icol**

Specifies the leftmost column in which *fromstr* can appear; if *rcol* is not specified, then *fromstr* must begin exactly in *Icol*.

**rcol**

Specifies the rightmost column in which *fromstr* can appear.

**SEGMENT**

Identifies the segment that is used in the change.

**segname**

Limits the change for *fromstr* to the specified segment name.

**CHILD**

Limits the change to only those segments which are subordinate to the current segment.

**CURR**

Limits the change to the current segment.

**REC**

Limits the change to the current segment's entire IMS database record.

Alias:  C, CHG

**CHAR**

Switches the current format mode to character.

**CHILD**

Positions to the specified child of the current segment

Syntax:

CHILD [segname|FIRST|LAST|n]
Syntax Description:

segname
Segment name of the subordinate segment that you would like to reposition to.

FIRST
Positions to the first child occurrence of the current segment. This is the default value.

LAST
Positions to the last child occurrence of the current segment.

n
Positions to the n-th child occurrence from the current segment or the current segment’s child_segname when specified.

CKEY
Displays the current segment’s concatenated key components by segment. Once displayed, you can enter the following commands:

CANCEL
Return to the Edit session

CHAR
Display the data in character mode.

DOWN
Page DOWN by one page

END
Return to the Edit session

HEX
ON/OFF to display the data in hexadecimal or character mode respectively

SF
Display the key in Single Formatted mode

UP
Page UP by one page

COLS
Inserts a scale line at the current segment location.
**COMMIT**

Commits all outstanding updates to the IMS database being edited.

**Note:** COMMIT requires the presence of an I/O PCB in the PSB selected for use when editing the database.

**DBCHART**

Displays the current DBD’s IMS hierarchy in chart form.

**DBINFO**

Displays the current DBD’s information along with its DSNs and their characteristics.

**DELETE**

Places, and executes a delete line command on the $N$ displayed segments starting with the segment at the top of the screen.

Syntax:

```
DELETE [1 | n ]
```

**Syntax Description:**

$n$

An integer value signifying the $N$ number of segments to delete, starting with the segment displayed at the top of the screen. If $N$ is provided, then it must include all subordinate segments. If $N$ is omitted, or is 1, then the target segment and all of its subordinate segments are deleted.

**DOWN**

Moves the current database position toward the bottom of the IMS database when in Character or Multiple Record display mode. Moves the current field position toward the end of the segment when in Single Record display mode. The default is the SCROLL value.

Syntax:

```
DOWN [n |MAX |PAGE |CSR |HALF |DATA]
```
Syntax Description:

\[ n \]

Defines the number of segments to position downwards.

MAX

Jumps to the last segment in the IMS database or the last field in the segment.

PAGE

Scrolls forward one screen length.

CSR

Makes the line containing the cursor the current line by positioning it to the top of the display.

HALF

Scrolls forward half of the screen length.

DATA

Scrolls forward so that the last visible line becomes the first visible line.

EDIT

Switches the current browse session to an edit session.

END

Terminates the CA File Master Plus for IMS edit/browse session.

FIND

Locates data, or fields when in formatted mode.

Syntax:

FIND
\[ fromstr \]
[FIRST|LAST|NEXT|PREV|ALL]
[WORD|PREFIX|SUFFIX|CHAR|FIELD]
[label1 label2]
[lcol rcol]
[[SEGMENT] segname]
[CHILD|CURR|REC]
Syntax Description:

**fromstr**

Specifies the 'from' string. This value can be a simple character string, with or without quotes; a character string specified as C'ccc'; a text string specified as T'ccc'; a hex string specified as X'xx'; or a packed-decimal expression specified as P'v or PLn'vvv'. For more information, see Rules for Finding Packed Strings on the FIND Command later in this chapter.

**FIRST**

Starts the search at the beginning of the IMS database, and locates the first occurrence of fromstr.

**LAST**

Starts the search at the end of the IMS database, and locates the last occurrence of fromstr.

**NEXT**

Starts from the current cursor position, and locates the next occurrence of fromstr. This is the default value.

**PREV**

Starts from current cursor position, and locates the previous occurrence of fromstr.

**ALL**

Locates all occurrences of fromstr.

**WORD**

Specifies that fromstr should match only complete words.

**PREFIX**

Specifies that fromstr should match only strings at the beginning of words.

**SUFFIX**

Specifies that fromstr should match only strings at the end of words.

**CHAR**

 Specifies that fromstr should match regardless of word status. This is the default value.

**FIELD**

Specifies that fromstr should match a field name when displaying formatted records.
**label1**

Specifies the first end point in a range of lines to which the FIND keyword should be restricted.

**label2**

Specifies the second end point in a range of lines to which the FIND keyword should be restricted.

**lcol**

Specifies the leftmost column in which `fromstr` can appear; if `rcol` is not specified, then `fromstr` must begin exactly in `lcol`.

**rcol**

Specifies the rightmost column in which `fromstr` can appear.

**SEGMENT**

Identifies the segment that is used in the search.

**segname**

Limits the search for `fromstr` to the specified Segment Name.

**CHILD**

Limits the search to only those segments which are subordinate to the current segment.

**CURR**

Limits the search to the current segment.

**REC**

Limits the search to the current segment's entire IMS database record.

Alias: F
**FINDLIM**

Sets the FINDLIM profile setting to the number of segments searched when using the either the FIND or CHANGE command. To view the current FINDLIM value, use the PROFILE command.

Syntax:

```
FINDLIM [5000 | n ]
```

Syntax Description:

- **n**
  
  Sets the FINDLIM profile setting to \( N \). \( N \) must be an integer value between 0 and 99,999,999, inclusive. This number limits the number of subsequent segments searched when using the FIND or CHANGE commands. A value of 0 means that there is no limit to the number of segments that are searched.

**HELP**

Invokes the CA File Master Plus for IMS HELP processor.

**HEX**

Sets the hex profile setting to ON or OFF. To view the current hex setting, use the PROFILE command. When set to ON, the current display is displayed in hex format.

Syntax:

```
HEX [ON|OFF]
```

Syntax Description:

- **ON**
  
  Sets the hex profile setting to ON. This value displays all data in hexadecimal format.

- **OFF**
  
  Sets the hex profile setting to OFF. This value displays data in character format. OFF is the default value.

**HILITE**

Sets the HILITE profile setting to either ON or OFF. To view the current HILITE setting, use the PROFILE command.

Syntax:

```
HILITE [ON|OFF]
```
Syntax Description:

ON

Sets the HILITE profile setting to ON. This value causes all target strings of the FIND and CHANGE command to be highlighted. This is the default value.

OFF

Sets the HILITE profile setting to OFF. This value disables highlighting of the FIND and CHANGE target strings.

Alias: HI, HILIGHT

INSERT

Inserts a new segment immediately after the current segment, the segment at the top of the display. When in Character mode, a line containing all blanks is inserted. When in Single or Multiple Record Formatted mode, the inserted segment is initialized using the field-name data types as defined in the record layout.

Alias: I

KEY

Toggles the current segment key for protection or no protection.

Alias: K

LEFT

Scrolls the current column position toward the beginning of the segment when in Character or Multiple Record Formatted mode. The default value is the SCROLL value. This command has no affect when specified in Single Record Formatted mode.

Syntax:

LEFT [n|MAX|PAGE|CSR|HALF|DATA|1]

Syntax Description:

n

Defines the number of columns to scroll.

MAX

Sets the column position to the beginning of the segments.
PAGE

Scrolls one screen to the left. When in Multi Record format mode, the rightmost visible column becomes the column before the leftmost visible column on the screen.

CSR

Attempts to make the column under the cursor the rightmost displayed column if the cursor is on a data line.

HALF

Scrolls half of the screen width to the left when in Character or Multiple Record display modes.

DATA

Attempts to change the column position so that the leftmost visible column becomes the rightmost column position.

LOCATE

Jumps directly to a segment.

Syntax:

LOCATE lnum | label | {key_value} KEY | kwd_value [FIRST|LAST|NEXT|PREV]

Syntax Description:

Lnum

Specifies the line of the segment relative to the beginning of the current display.

label

Specifies a previously defined label.

key_value

Specifies the root segment key value.

key

When a key_value is provided, it jumps to the root segment whose key value is GTEQ key_value. This is only valid for keyed databases.

When key_value is omitted, the current segment's concatenated key is displayed on the Locate Key panel. This key can be updated with the concatenated key value of the segment you want to position to. For more information, see the Locate Segments by Key (see page 111) section later in this chapter.
**kwd_value**

Specifies one of the following commands:

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHANGE</td>
<td>Jump to segment with line CHANGE attribute.</td>
</tr>
<tr>
<td>COMMAND</td>
<td>Jump to segment with line COMMAND attribute.</td>
</tr>
<tr>
<td>ERROR</td>
<td>Jump to segment with line ERROR attribute.</td>
</tr>
<tr>
<td>SPECIAL</td>
<td>Jump to segment following a SPECIAL line attribute (BNDS, COLS, MASK)</td>
</tr>
</tbody>
</table>

**FIRST**

With 'kwd_value' jumps to the first segment with the requested attribute.

**LAST**

With 'kwd_value' jumps to the last segment with requested attribute.

**NEXT**

With 'kwd_value' jumps to the next segment with the requested attribute.

**PREV**

With 'kwd_value' jumps to the previous segment with the requested attribute.

*Alias: L, LOC*

**MF**

Switches the current Display mode to Multi-Record.

**NEXT**

When in single record format mode, display the next segment.

Syntax:

```
NEXT   [n|1]
```

Syntax Description:

- **n**

  Defines the number of segments to scroll downward. Must be an integer value between 1 and 99,999,999. The default value is 1.

*Alias: N*
**NULLS**

Sets the NULLS profile setting to ON, OFF, or FULL. To view the current NULLS setting, use the PROFILE command.

**Syntax:**

```
NULLS [ON|OFF|FULL]
```

**Syntax Description:**

**ON**

Sets the NULLS profile setting to ON. Allows you to INSERT data, shifting data to the right.

**OFF**

Sets the NULLS profile setting to OFF. Trailing blanks at the end of the data are written to the panel as blanks.

**FULL**

Sets the NULLS profile setting to FULL. All trailing blanks at the end of data are written as nulls.

---

**PARENT**

Position to the parent of the current segment, or to the specified segment in the hierarchy of the current segment.

**Syntax:**

```
PARENT [segname]
```

**Syntax Description**

**segname**

Defines the segment name of the segment within the parentage of the current segment. If a segment name is not entered, the command defaults to the segment one level higher than the current segment in the IMS hierarchy.
PREV

When in single record format mode, display the previous segment.

Syntax:

PREV   [n | 1]

Syntax Description:

n
Defines the number of segments to scroll up. Must be an integer value between 1 and 99,999,999. The default value is 1.

Alias:  P

PROFILE

Display the current profile settings, or switches to a different profile. The settings available with the PROFILE command are: AUTOCOMMIT, AUTOSAVE, CAPS, FINDLIMIT, HEX, HILITE, and NULLS. Their values can be updated from the profile panel. See the specific commands for their values.

Note: If your site prevents modifications to AUTOCOMMIT, you can still use the AUTOCOMMIT primary command to change this setting the time of the current Edit session.

Syntax:

PROFILE   [DEFAULT|name]

Syntax Description:

name

Defines the name of the profile to be loaded and displayed. If omitted, the DEFAULT profile is used.

Alias:  PRO, PROF

RCHANGE

Used to repeat the most recent CHANGE command.

REPEAT

Repeats the segment that appears at the top of the screen.

Alias:  R
**RESET**

Resets the selected processing options and status conditions.

Syntax:

```
RESET  [ALL|LABELS|COMMAND|ERROR|CHANGE|SPECIAL|FIND] [ range ] .ZFIRST .ZLAST
```

Syntax Description:

- **ALL**
  - Removes all current processing options and status conditions; this is the default value.

- **LABELS**
  - Removes line labels.

- **COMMAND**
  - Removes pending line commands.

- **ERROR**
  - Removes ERROR flags.

- **CHANGE**
  - Removes CHG flags.

- **SPECIAL**
  - Removes all SPECIAL lines (MASK, COLS, TABS, BNDS).

- **FIND**
  - Removes all FIND highlights.

- **range**
  - Defines optional line range specified as a start label and end label. Only lines within the specified range are affected. If no range is provided, then all segments are reset.

- **.ZFIRST**
  - Specifies the first displayable segment.

- **.ZLAST**
  - Specifies the last displayable segment.

Alias: RES

**RETURN**

Returns to the CA File Master Plus for IMS Main Menu.
**RFIND**

Repeats the most recently entered FIND command, or the search part of the most recent CHANGE command.

**RIGHT**

Scrolls the current column position toward the end of the segment when in Character or Multiple Record Formatted mode. The default is the SCROLL value. This command has no affect when specified in Single Record Formatted mode.

Syntax:

```
RIGHT [n|MAX|PAGE|CSR|HALF|DATA]
```

Syntax Description:

- **n**
  Number of columns to scroll right.
- **MAX**
  Sets the column position to the end of the segments.
- **PAGE**
  Scrolls one screen-width to the right. When in Multi Record Formatted mode, the leftmost visible column is the column after the rightmost visible column on the screen.
- **CSR**
  If the cursor is on a data line, attempts to make the column under the cursor the rightmost displayed column.
- **HALF**
  Scrolls half of the screen width to the right when in Character or Multiple Record Formatted modes. Scrolls one record right when in Single Record formatted mode.
- **DATA**
  Attempts to change the column position so that the rightmost visible column becomes the leftmost column position.

**ROLLBACK**

Discards any outstanding updates.

**Note:** ROLLBACK requires the presence of an I/O PCB in the PSB selected for use when editing the database. If there is no I/O PCB present, changes cannot be backed out. The dynamic PSBs generated by CA File Master Plus for IMS always contain an I/O PCB.
ROOT

Reposition to the requested root segment.

Syntax:

\texttt{ROOT \{FIRST\|LAST\|NEXT \[n\]|PREV \[n\]|CURRENT\}}

Syntax Description:

\textbf{FIRST}  
Positions to the first root of the IMS database.

\textbf{LAST}  
Positions to the last root of the IMS database.

\textbf{NEXT}  
Positions to the root that follows the root of the current segment.

\textbf{PREV}  
Positions to the root that precedes the root of the current segment.

\textbf{CURRENT}  
Positions to the root of the current segment. This is the default value.

\texttt{n}  
Specifies the number of roots to proceed forward or backward from the current segment. If omitted, the default value is 1.

SAVE

Saves all outstanding updates to the IMS database being edited.

\textbf{Note}: SAVE requires the presence of an I/O PCB in the PSB selected for use when editing the database.

SEGMENT

Displays the listed segnames that are not subordinate to any EXPAND, +, or COLLAPSE, -, line commands.

Syntax:

\texttt{SEGMENT \{[INCLUDE \| EXCLUDE] \{\texttt{segname} \| *\}[ \_\_\]}
Syntax Description:

**INCLUDE or I**
Includes the listed segnames into the current display. This is an optional parameter.

**EXCLUDE or X**
Exclude the listed segnames from the current display. This is an optional parameter.

**segname**
Defines the segment name that is to be processed. A list of *segnames* may be entered to process multiple segment names in the same display. Each segname must be separated by a space.

* 
Includes all segment types in the display.

**Note:** When no parameters are provided, the Specify Segment pop-up is displayed. This allows selection of which segnames to display or omit from the display.

**SELECT**
Displays record selection criteria used to browse or edit the IMS database.

**SF**
Switches the current display mode to Single Record.

**TOP**
Jumps to the first segment in the IMS database.

**TWIN**
Positions to the same segment name as the current segment, within the same parent.

Syntax:

TWIN [FIRST|LAST|NEXT\[n\]|PREV\[n\]]

Syntax Description:

**FIRST**
Positions to the first segment of this type within the current parent.

**LAST**
Positions to the last segment of this type within the current parent.
NEXT
Positions to the next segment of this type within the current parent. This is the default value.

PREV
Positions to the previous segment of this type within the current parent.

$n$
Specifies the integer value signifying the number of segments to position forward or backward within the current parent. The default value is 1.

UP

Moves the current line position toward the beginning of the IMS database when in Character or Multiple Record Formatted mode. Moves the current field position toward the beginning of the segment when in Single Record Formatted mode. The default is the SCROLL value.

Syntax:

```
UP [n|MAX|PAGE|CSR|HALF|DATA]
```

Syntax Description:

$n$
Defines the number of lines to move.

MAX
Jumps to the first line in the IMS database or first field in the record.

PAGE
Scrolls back one screen length.

CSR
If the cursor is on a data line, attempts to make the line containing the cursor the last line to be displayed on the screen.

HALF
Scrolls backward half of the screen length.

DATA
Scrolls backward so that the first visible line becomes the last visible line.
Rules for Finding Packed Strings on the FIND Command

A packed string can be entered in one of the following formats on the FIND command:

\[ \text{F P}'v' [cc] \]

Where 'v' is a value of 1 to 31 numeric digits (0-9) and 'cc' is the starting column location to be searched for the packed string.

The search is conducted as follows:

- When a '+' or '-' is not specified before a value, the search is done for a packed string that contains the specified numeric digits and a sign of 'F', 'A', 'C', 'E', 'B', or 'D'.
- When a '+' is specified before a value, the search is done for a packed string that contains the specified numeric digits and a sign of 'F', 'A', 'C', or 'E'.
- When a '-' is specified before a value, the search is done for a packed string that contains the specified numeric digits and a sign of 'B' or 'D'.
- When a starting column is not specified, the find command finds the first occurrence of the 'v' value in any valid length packed decimal field in the segment. A valid length is 1-16 packed bytes or 1-31 packed decimal digits.

\[ \text{F PL[n]}'vvvvv' [cc] \]

Where 'n' is an integer value representing the length of the packed field and 'vvvvv' is a value comprised of numeric digits. The number of digits in the value must be twice the specified length minus 1, and is limited to 31 digits in length.

If 'cc' is not specified, the search looks for the specified packed value and length anywhere in the segment.

Examples:

- F P'0' 21  find packed zero of any valid length at column 21
- F P'0' find packed zero of any valid length anywhere in the segment
- F P'00000' find 5 packed zeros anywhere in the segment.
- F P' -1' 30 find packed -1 of any valid length at column 30
- F PL5'0' 10 find 5 packed zeros at column 10
- F PL3'0' find 3 packed zeros anywhere in the segment
- F PL2 10 find any valid 2-byte packed number at column 10
- F PL16 find any valid 16-byte packed number anywhere in the segment

Line Commands

The line commands available in Edit Character and Multiple Record Formatted modes are listed in the following table. These line commands are not available in Single Record Formatted mode.

Line commands can be specified in the two-position 'C' or command field, which is located on the extreme left side of the edit screen.
Only one line command can be entered for a specific segment sequence, but multiple line commands can be entered on different lines on the same screen.

Before any line commands are processed, all line commands are checked for validity, and if any errors are found, an appropriate message appears.

Line commands can be removed by overtyping the line command characters with spaces or by specifying the RESET primary command.

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Sets the target of a copy/move command; the segment is inserted after the segment containing the command.</td>
</tr>
<tr>
<td>B</td>
<td>Sets the target of a copy/move command; the segment is inserted before the segment containing the command.</td>
</tr>
<tr>
<td>BND</td>
<td>Inserts a 'BNDS' line above the current line.</td>
</tr>
<tr>
<td>BNDS</td>
<td>Same as BND.</td>
</tr>
<tr>
<td>BOUNDS</td>
<td>Same as BND.</td>
</tr>
<tr>
<td>C[n]</td>
<td>Sets the source segment of a copy command. The target of the Copy operation is a parent of the segment being copied. Use the After or Before line command to identify the target parent. Placing an After or Before on any dependent segment selects that segment’s parent as the target. Likewise, an After placed on the parent itself, or a Before placed on the segment immediately following the last child of a parent, selects that parent as the target. The target pointed to by the After or Before must be a parent with the same segment name as the parent of the segment being copied. If the source segment key duplicates an existing key in the target parent, the duplicate key resolution pop-up displays, containing the fully concatenated key of the target parent segment, and the key of the source segment. Only the key of the source segment can be altered. Select a unique key value and press Enter.</td>
</tr>
<tr>
<td>CC</td>
<td>Sets one end point of a range of segments to be copied. When you use the CC line command, the target of the operation is a parent of the highest level segment being moved or copied. Use the After or Before line command to identify the target parent. Placing an After or Before on any dependent segment selects that segment’s parent as the target. Likewise, an After placed on the parent itself, or a Before placed on the segment immediately following the last child of a parent, selects that parent as the target. The target pointed to by the After or Before must be a parent with the same segment name as the parent of the segment being copied. If any of the source segment keys in the block being copied duplicates an existing key in the target parent, the duplicate key resolution pop-up displays for that segment, containing the fully concatenated key of the target parent segment, and the key of the source segment. Only the key of the source segment can be altered. Select a unique key value and press Enter.</td>
</tr>
<tr>
<td>Command</td>
<td>Description</td>
</tr>
<tr>
<td>---------</td>
<td>-------------</td>
</tr>
<tr>
<td>CHAR</td>
<td>Switches the current line to Character mode from Multi-Record mode.</td>
</tr>
<tr>
<td>CHILD</td>
<td>Positions to the current segment’s first child.</td>
</tr>
<tr>
<td>CK</td>
<td>Displays the segment’s concatenated key.</td>
</tr>
<tr>
<td>COLS</td>
<td>Inserts a column scale line above the current line.</td>
</tr>
<tr>
<td>D[n]</td>
<td>Deletes the following n number of displayed segments. If n is provided, then it must include all subordinate segments. If n is omitted, or is 1, then the target segment and all of its subordinate segments are deleted. <strong>Important!</strong> When placed on a parent segment, all subordinate segments to that parent are deleted, regardless of whether the subordinate segment displays.</td>
</tr>
<tr>
<td>DD</td>
<td>Sets one end point of a range of displayed segments to be deleted. The Delete block must contain all subordinate segments.</td>
</tr>
<tr>
<td>I[n]</td>
<td>Inserts a blank segment after the current segment. When the Insert line command is used, the target of the operation is a parent of the segment being inserted. Placing an Insert on any dependent segment selects that segment’s parent as the target. If the target pointed to by the Insert is not a parent of the segment being inserted, the Insert operation is rejected. A new segment is created with the Segment Name field unlocked. Enter a valid segment name for this parent and press Enter. The segment name is accepted and the record area is unlocked. Enter the segment’s data, including the key, and press Enter. If the key entered is not unique, the Duplicate Key Resolution pop-up panel is displayed. Enter the new key’s value and press Enter to accept it.</td>
</tr>
<tr>
<td>K[n]</td>
<td>Toggles to unlock or lock (unprotect or protect) the key field for a keyed segment, allowing the key field to be modified. The key field remains unlocked until it is locked again or the edit session is terminated.</td>
</tr>
<tr>
<td>KK</td>
<td>Sets one endpoint to toggle unlock/lock (unprotect/protect) the key field for a keyed segment.</td>
</tr>
<tr>
<td>LC[n]</td>
<td>Converts all of the segment’s uppercase alphabetic characters to lowercase.</td>
</tr>
<tr>
<td>LCC</td>
<td>Sets one endpoint of a range of lines to be lowercased.</td>
</tr>
<tr>
<td>LK</td>
<td>Allows you to position to a desired segment.</td>
</tr>
</tbody>
</table>
### Command Description

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
</table>
| **M[n]** | Moves the following \( n \) number of displayed segments. If \( n \) is provided, then it must include all subordinate segments. If \( n \) is omitted, or is 1, then the target segment and all of its subordinate segments are moved.  
When the Move line command is used, the target of the operation is a parent of the segment being moved. Use the After or Before line command to identify the target parent.  
Placing an After or Before on any dependent segment selects that segment's parent as the target. Likewise, an After placed on the parent itself, or a Before placed on the segment immediately following the last child of a parent, selects that parent as the target.  
The target pointed to by the After or Before must be a parent with the same segment name as the parent of the segment being moved. If the source segment key duplicates an existing key in the target parent, the duplicate key resolution pop-up displays, containing the fully concatenated key of the target parent segment, and the key of the source segment. Only the key of the source segment can be altered. Select a unique key value and press Enter.  
If the Move operation is successful, the source segment and any included subordinate segments are deleted. |
| **MASK** | Inserts a 'MASK' line to be used for a model for all inserted segments. |
| **MF** | Switches the current display mode to Multi-Record Format mode. |
| **MM** | Sets one end point of a range of displayed segments to be moved. The Move block must contain all subordinate segments.  
When the MM line command is used, the target of the operation is the parent of the highest-level segment being moved or copied. Use the After or Before line command to identify the target parent.  
Placing an After or Before on any dependent segment selects that segment's parent as the target. Likewise, an After placed on the parent itself, or a Before placed on the segment immediately following the last child of a parent, selects that parent as the target.  
The target pointed to by the After or Before must be a parent with the same segment name as the parent of the segment being moved. If any of the source segment keys in the block being moved duplicates an existing key in the target parent, the duplicate key resolution pop-up displays for that segment, containing the fully concatenated key of the target parent segment, and the key of the source segment. Only the key of the source segment can be altered. Select a unique key value and press Enter.  
If the MM operation is successful, all segments within the Move block at the source location will be deleted. |
<p>| <strong>N[n]</strong> | Repositions forward by ( n ) displayed segments of the same segment name. |
| <strong>P[n]</strong> | Repositions backward by ( n ) displayed segments of the same segment name. |
| <strong>PARENT</strong> | Repositions to the current segment's parent. |</p>
<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>R[n]</td>
<td>Repeats the target segment n times. When using the Repeat Segment line command on a keyed segment, the Key Resolution pop-up panel is always displayed. All higher level keys are presented but are not modifiable. Type the new key you want over the source key and press Enter. The new segment is displayed in key sequence.</td>
</tr>
<tr>
<td>ROOT</td>
<td>Repositions to current segment's root.</td>
</tr>
<tr>
<td>RR[n]</td>
<td>Sets one end point of a range of segments to be repeated. The end point RR command must be at the same or lower hierarchical level than the beginning point RR command.</td>
</tr>
<tr>
<td>SF</td>
<td>Switches the current line to Single Record Format mode.</td>
</tr>
<tr>
<td>TWIN</td>
<td>Positions to the current segment's subsequent twin.</td>
</tr>
<tr>
<td>UC[n]</td>
<td>Converts all of the segment's lowercase alphabetic characters to uppercase.</td>
</tr>
<tr>
<td>UCC</td>
<td>Sets one end point of a range of lines to be uppercased.</td>
</tr>
<tr>
<td>V[n]</td>
<td>Sets the variable segment's length. This command is valid only for segments with a variable length.</td>
</tr>
<tr>
<td>VV</td>
<td>Sets one end point of a range of lines to have their length adjusted. This command is valid only for segments with a variable length.</td>
</tr>
<tr>
<td>+n</td>
<td>Expands the segment’s hierarchy to display all subordinate segments regardless of what segments may have been excluded by the SEGMENT command. If n is specified, a maximum of n levels display for the segment.</td>
</tr>
<tr>
<td>-n</td>
<td>Collapses the segment’s hierarchy to display only the segment. If n is specified, a maximum of n levels display for the segment regardless of what segments may have been excluded by the SEGMENT command.</td>
</tr>
<tr>
<td>](n)</td>
<td>Shifts right.</td>
</tr>
<tr>
<td>)))([n]</td>
<td>Sets one end point of a range of lines to be shifted right</td>
</tr>
<tr>
<td>(l[n]</td>
<td>Shifts left.</td>
</tr>
<tr>
<td>((([[n]</td>
<td>Sets one end point of a range of lines to be shifted left.</td>
</tr>
<tr>
<td>&gt;[n]</td>
<td>Shifts the data to the right.</td>
</tr>
<tr>
<td>&gt;&gt;[n]</td>
<td>Sets one end point of a range of lines to be data shifted right.</td>
</tr>
<tr>
<td>&lt;[n]</td>
<td>Shifts the data to the left.</td>
</tr>
<tr>
<td>&lt;&lt;[n]</td>
<td>Sets one end point of a range of lines to be data shifted left.</td>
</tr>
</tbody>
</table>

n - Integer value of the number of times the operation is to be repeated.
Create New Segments

The INSERT, REPEAT, COPY, and MOVE line commands allow you to create new segments. The target segments for each of these commands must adhere to the database's hierarchy.

To create a new segment using the Insert command

1. Enter the I line command on any segment that is at or below the parent of the segment to be inserted.
2. Enter the segment name you want, and press Enter. The segment name is accepted, if it meets the requirement stated in point 1, and the record area is unlocked.
3. Enter the segment’s data, including the key, and press Enter. If the key entered is not unique, the Duplicate Key Resolution pop-up panel is displayed. Enter the new key's value and press Enter to accept it.

To create a new segment using the Repeat command

1. Enter the R line command on the segment in which you would like to repeat. Or, enter the repeat line command while the repeat position is at the topmost segment of the display.
   
   The source segment is repeated, and the Key Resolution pop-up panel is displayed.
2. Enter the new key's value and press Enter to accept it.

Note: If the segment's new key is out of order, the new key is displayed in its appropriate position.

To create a new segment using the Copy and Move commands

Unlike the Insert and Repeat commands, the Copy and Move commands require both a source and a target. Because the source segment must fit into the hierarchy of the target location, the target of a Copy or Move must be a parent of the source segment.

1. Select the source segments to be copied or moved, by placing C or M next to it.
2. Select the parent that is the target of the operation using one of the following methods:
   - Use a Before or After command on any dependent segment in the target parent.
   - Use an After command on the target parent.
   - Use a Before command on the segment following the last dependent child in the target parent.
If the selected target does not fit the hierarchy for the source segment, the operation is rejected.

The Key Resolution pop-up panel displays if the key is duplicated.

3. Enter the new key's value and press Enter to accept it, or press Enter to keep the original key.

**Note:** If the segment’s new key is out of order, the new key is displayed in its hierarchical appropriate position.

### Keyed IMS Database Types

Following is the CA File Master Plus for IMS Edit screen as it appears for a keyed IMS database. The key is highlighted and is protected. The COLS scale line is displayed automatically on this panel.

<table>
<thead>
<tr>
<th>CA File Master Plus for IMS Edit DBD: DBDIVP</th>
<th>Columns 00001 00063</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMMAND ====&gt;</td>
<td>SCROLL ====&gt; CSR</td>
</tr>
<tr>
<td>C Segment</td>
<td>1-2-3-4-5-6-</td>
</tr>
<tr>
<td>STUDENT</td>
<td>08001DAVID PERKINS 1221209 W. 75TH ST</td>
</tr>
<tr>
<td>SUBJECT</td>
<td>C315INTRO TO BIOCHEM 40C210CHEMISTRY I B220BIOLOGY I</td>
</tr>
<tr>
<td>TEACHER</td>
<td>DOROTHY ROPER PHD C10104 FERN CT.</td>
</tr>
<tr>
<td>CLASS</td>
<td>0401L98LECTURE 0050</td>
</tr>
<tr>
<td>SUBJECT</td>
<td>H316US CIVIL WAR 30</td>
</tr>
<tr>
<td>TEACHER</td>
<td>SAM SANDERSON BS H6B1860 BOOTH ST.</td>
</tr>
<tr>
<td>CLASS</td>
<td>0201182LECTURE 0025</td>
</tr>
<tr>
<td>SUBJECT</td>
<td>L384SHAKESPEARE 30E321JR ENGLISH I E322JR ENGLISH</td>
</tr>
<tr>
<td>TEACHER</td>
<td>ANGELINA ORTEGA BS L412091 PLEASANT HILL RD.</td>
</tr>
<tr>
<td>CLASS</td>
<td>0501222LECTURE 0025</td>
</tr>
<tr>
<td>SUBJECT</td>
<td>M301CALCULUS II 40M300CALCULUS I</td>
</tr>
<tr>
<td>TEACHER</td>
<td>MICHAEL ALDERMAN BS M9A37 S. PLIMPTON ST. APT P5</td>
</tr>
<tr>
<td>CLASS</td>
<td>010115LECTURE 0025</td>
</tr>
<tr>
<td>SUBJECT</td>
<td>P104SR. MENS PHYS ED 30</td>
</tr>
<tr>
<td>TEACHER</td>
<td>DOUG EVANSON BS P48101 N. MAIN ST. APT 6321</td>
</tr>
<tr>
<td>CLASS</td>
<td>005110GYM 0050</td>
</tr>
<tr>
<td>SUBJECT</td>
<td>X003STUDY HALL 00</td>
</tr>
<tr>
<td>TEACHER</td>
<td>SUZANNE PETERSON BS A092364 HILL LN. APT A647</td>
</tr>
<tr>
<td>CLASS</td>
<td>0301G18LECTURE 0300</td>
</tr>
<tr>
<td>HISTORY</td>
<td>09120017AB90SMITHVILLE HIGH SCHOOL 860-555-0823</td>
</tr>
</tbody>
</table>

### Validate New Segment Key

When a new segment’s key requires validation, the Key Resolution pop-up opens with the key value. The lowest segment’s key value can be updated. The higher segments' keys values are protected and cannot be updated here.

Confirm the new segment’s key by pressing Enter. The operation can be terminated by entering cancel or end, F12 or F3 respectively.
Modify the Key of an Existing Segment

The Key line commands, K and KK, toggle key protection. When protection is toggled off, the key can be updated. When protection is toggled on, the key cannot be updated.

Any lines whose keys are unprotected (because they were created by the insert, replace, move, or copy commands, or because the key was made available for update by the Key command), have the key unprotected until another Key line command is specified, or until the edit session is terminated.

Locate Records By Key

When editing or browsing a keyed IMS database, you can use the LOCATE primary command, or LK line command, to locate a segment whose key value is equal to the key_value specified by the locate command. For example, use the L 00000001234 KEY command to position the browse or edit session to the root segment that has a key that is equal to or greater than 00000001234.

However, omitting the key_value displays the Locate Key panel. On this panel, overtype the current segment’s key with the concatenated key of the segment you want to position to.

```
----------------------------- Locate Key -----------------------------

COMMAND ===>  
END to Locate key

Segment  Key Value
STUDENT  00001
SUBJECT  C315
TEACHER  C10
CLASS    0401L98
```
Following are the rules for the LOCATE KEY command.

For key ordered databases, the following rules apply:

■ If the segment exists, then you will be positioned to it.
■ If the root of the requested key is greater than the last root on the database, you will be positioned to the last root on the database.
■ If the requested root’s key does not exist, you will be positioned to the next greater than root.
■ If the requested root’s key exists, but the segment does not exist on the database, you will be positioned on the lowest level segment whose concatenated key matches your request.

For random ordered databases, the following rules apply:

■ If the segment exists, then you will be positioned to it.
■ If the requested root’s key does not exist, there is no change to your current position.
■ If the requested root’s key exists, but the segment does not exist on the database, you will be positioned on the lowest level segment whose concatenated key matches your request.

The following commands are available on the Locate Key panel:

CANCEL
Return to the Edit session, without repositioning to the concatenated key’s segment.

CHAR
Display the data in character mode.

DOWN
Position by one page towards the end of the database.

END
Return to the Edit session, repositioned to the concatenated key’s segment.

HEX
ON/OFF to display the data in hexadecimal or character mode respectively.

SF
Display the key in Single Formatted mode.

UP
Position by one page towards the top of the database.
Out of Sequence Keys

When a new segment is added by using either insert, repeat, copy, or move, or when the key field is modified, pressing Enter causes all segments to be redisplayed in their correct hierarchical key sequence.

Changing Data

This section explains how to change data.

CHANGE Command

The CHANGE command only updates the fromstr that are currently viewable. Any segments that contain the fromstr and are excluded from the display will not be changed.

Change Command "From" and "To" Character Strings of Different Lengths

CA File Master Plus for IMS allows changing commands with from and to character strings of different lengths.

When the tostr is shorter than the fromstr, columns to the right of the fromstr are shifted left, and fill characters are added at the end, within the bounded CHANGE area. The pop-up window, Change Confirmation, is displayed, and explains how the change command works and how it allows you to specify a different pad character and proceed with or cancel the change command.

When the tostr is longer than the fromstr, columns to the right of the tostr are shifted right, and excess characters at the end are truncated, within the bounded CHANGE area. The pop-up window, Change Confirmation, is displayed and explains how the change command works and lets you proceed with or cancel the change command.

Modify the Key of an Existing Segment

The key line commands, K and KK, toggle key protection. When protection is toggled off, the key can be updated. When protection is toggled on, the key cannot be updated. Any lines whose keys are unprotected (because they were created by the insert, replace, move, or copy commands, or because the key was made available for update by the key command), have the key unprotected until another key line command is specified, or until the edit session is terminated.
Modify and Control Record Length of New Segments

When editing a variable length segment, some situations require a segment length to be changed or assigned. The following conditions may cause this to occur:

- Increasing or decreasing the segment length of an existing segment
- Assigning the segment length of a repeated, moved, or copied segment
- Assigning the segment length of an inserted segment

Increase/Decrease the Length of an Existing Segment

To change the segment length of an existing segment, a line command of V (for variable length) is supported that causes the Edit Length Modification pop-up to appear. You can enter both the segment length you want and the pad character for the segment.

```
Segment Length Modification

COMMAND ==> 
Segment length may be updated to any value within the range of the minimum and maximum values below.

Segment Name ===> QTYPEHST
Minimum Length ===> 128
Maximum Length ===> 5187
Current Length ===> 128
Pad Character ===> X'40'

ENTER to perform Segment Length update.
END or CANCEL to cancel Segment Length update request.
```

When a record is repeated, moved, or copied using the Repeat, Move or Copy line commands, the segment length of the repeated, moved, or copied segment is used. You can then use the V line command to modify the length of these segments.

Data Display in Formatted Modes

One of the options on the main edit and browse panels is the initial Display mode. There are three Display, or format, modes: Single Record (S), Multi Record (M) and Character (C).

Character mode does not require layouts. Layouts for both Single and Multi-Record modes are optional. If the segment's layout cannot be resolved, then CA File Master Plus for IMS generates a default layout for that segment. When a layout is wanted, then COBOL or PL/I copybooks, or CA File Master Plus for IMS Custom Record Layouts may be used. Either layout must be defined and available to CA File Master Plus for IMS before it can be referenced.
When using a CRL, provide the name of the PDS that contains the CRLs by entering the name in the CRL data set field of the Browse or Edit screens.

To display data using traditional layouts, the Layout data set field must reference the library that contains the segments' layouts. This library can be a PDS, CA Panvalet, or CA Librarian data set. If the PDS member names do not match the database's segment names, then the CA File Master Plus for IMS Segment Cross-Reference PDS must have an entry that shares the same name as the DBD. (The Segment Cross-Reference PDS is set under CA File Master Plus for IMS option 0.3.) The Layout data set field, in this case, must contain the members referenced by the Segment Cross-Reference member.

The commands Char for Character mode, SF for Single Record mode, and MF for Multi Record mode, switch between formatted modes from within an Edit or Browse session.

**How Single Record Formatted Mode Works**

Editing an IMS database in Single Record Formatted mode displays a screen like the one shown in the following example. While in this display mode, data in the *value* column can be displayed and modified. Record data that is not in the proper format, as defined by the record layout, is displayed in hex format, X'xxxx', in the value column. While in this display mode, line commands are not available.

When modifying data in the value column, field-level editing rules are used based on the field format, and invalid data is not allowed unless it is in hex format.

In Single Record Formatted mode, the UP and DOWN commands scroll through the fields within a single segment. The LEFT and RIGHT commands scroll through the previous and next records. The TOP and BOTTOM commands display the first and last segments.

To insert, delete, or repeat records when in Single Record Formatted mode, use the INSERT, DELETE, and REPEAT primary commands.

To switch into this display mode from Character or Multi Record Formatted modes, specify the SF primary command, or the SF line command on the line you wish to display in Single Record Display mode.

To switch back to Character or Multi Record Formatted mode, specify the CHAR or MF primary command, respectively.
Single Record Formatted Mode Example:

<table>
<thead>
<tr>
<th>Field</th>
<th>Pos</th>
<th>Format</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>STUDENT-SEGMENT</td>
<td>1</td>
<td>N</td>
<td>247</td>
</tr>
<tr>
<td>STUDENT-ID</td>
<td>05</td>
<td>N</td>
<td>5 00001</td>
</tr>
<tr>
<td>STUDENT-NAME</td>
<td>05</td>
<td>C</td>
<td>30 DAVID PERKINS</td>
</tr>
<tr>
<td>STUDENT-CURR-Grade-Level</td>
<td>05</td>
<td>N</td>
<td>2 12</td>
</tr>
<tr>
<td>STUDENT-CURR-semester</td>
<td>05</td>
<td>N</td>
<td>1 2</td>
</tr>
<tr>
<td>STUDENT-ADDR</td>
<td>05</td>
<td>39</td>
<td>47</td>
</tr>
<tr>
<td>STUDENT-STREET</td>
<td>10</td>
<td>C</td>
<td>25 1209 W. 75TH ST</td>
</tr>
<tr>
<td>STUDENT-CITY</td>
<td>10</td>
<td>C</td>
<td>64 SMITHVILLE</td>
</tr>
<tr>
<td>STUDENT-STATE</td>
<td>10</td>
<td>C</td>
<td>79 CT</td>
</tr>
<tr>
<td>STUDENT-ZIP-CODE</td>
<td>10</td>
<td>C</td>
<td>81 06022</td>
</tr>
<tr>
<td>STUDENT-HOME-PHONE</td>
<td>05</td>
<td>C</td>
<td>86 860-555-9823</td>
</tr>
<tr>
<td>STUDENT-EMERGENCY-CONTACT (1)</td>
<td>05</td>
<td>C</td>
<td>98 50</td>
</tr>
<tr>
<td>STUDENT-CONTACT-Person (1)</td>
<td>10</td>
<td>C</td>
<td>98 30 SALLY PERKINS</td>
</tr>
<tr>
<td>STUDENT-CONTACT-PHONE (1)</td>
<td>10</td>
<td>C</td>
<td>128 860-555-3467 X1234</td>
</tr>
<tr>
<td>STUDENT-EMERGENCY-CONTACT (2)</td>
<td>05</td>
<td>C</td>
<td>148 50</td>
</tr>
<tr>
<td>STUDENT-CONTACT-Person (2)</td>
<td>10</td>
<td>C</td>
<td>148 30 DALE PERKINS</td>
</tr>
<tr>
<td>STUDENT-CONTACT-PHONE (2)</td>
<td>10</td>
<td>C</td>
<td>178 860-555-1392</td>
</tr>
<tr>
<td>STUDENT-EMERGENCY-CONTACT (3)</td>
<td>05</td>
<td>C</td>
<td>198 50</td>
</tr>
<tr>
<td>STUDENT-CONTACT-Person (3)</td>
<td>10</td>
<td>C</td>
<td>198 30</td>
</tr>
<tr>
<td>STUDENT-CONTACT-PHONE (3)</td>
<td>10</td>
<td>C</td>
<td>228 860-555-1392</td>
</tr>
</tbody>
</table>

How Multi Record Formatted Mode Works

When editing an IMS database in Multi Record Formatted mode with Custom Record Layouts, an automatic screen break occurs whenever a record layout change occurs for a segment that is to be displayed on the screen. When this occurs, the PF8 key displays the segments with the different layouts.

When editing an IMS database in Multi Record Formatted mode, only segments of the same segment type and with the same parent simultaneously display on the screen. A screen displays like the one shown in the following example. While in this display mode, the data in the field-name columns can be displayed and modified. Field data that is not in the proper format, as defined by the record layout, is displayed in hex format, X'xxxx', in the field column.

When modifying data in the field columns, field level editing rules are used based on the field format, and invalid data is not allowed unless it is in hex format.

When in Multi Record Formatted mode, the UP and DOWN commands scroll through the file displaying previous or next records just like Character and Hex modes. The LEFT and RIGHT commands scroll through the field names for the records on the current screen. The TOP and BOTTOM commands display the first and last data records.
Multi Record Formatted Mode Example:

<table>
<thead>
<tr>
<th>CA File Master Plus for IMS Browse DBD: DBDIVP</th>
<th>Columns 00001 00038</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMMAND ==&gt;</td>
<td>SCROLL ==&gt; CSR</td>
</tr>
<tr>
<td>Segment Name: STUDENT</td>
<td>Record Layout: STUDENT</td>
</tr>
<tr>
<td>STUDENT ID       STUDENT NAME        STUDENT CURR    STUDENT CURR SEMESTER</td>
<td></td>
</tr>
<tr>
<td>N 5  C 30       N 2          N 1</td>
<td></td>
</tr>
<tr>
<td>1 6----------------- 36---------- 38--------</td>
<td></td>
</tr>
<tr>
<td>00001  DAVID PERKINS      12 2</td>
<td></td>
</tr>
<tr>
<td>00002  SALLY PETERSON    12 2</td>
<td></td>
</tr>
<tr>
<td>00003  MAX KEOUGH       11 2</td>
<td></td>
</tr>
<tr>
<td>00018  GENE FARLEY      09 9</td>
<td></td>
</tr>
<tr>
<td>******************************************* Bottom of Data *******************************************</td>
<td></td>
</tr>
</tbody>
</table>

The field names that appear in the column headings (such as STUDENT-ID) are centered, with dashes removed to make it easier to read the field column headings. Under the field names, the field format and length (such as N 9) are displayed. Under the format is the offset of the field from the beginning of the record (such as 1).

Numeric data is right justified in the field column, and character data is left justified in the field column.

When modifying data in the field column, field level editing rules are used based on the field format. Invalid data is not allowed unless it is in hex format. If there is not enough room in the column to enter data in hex format, switch into Character or Single Record Formatted mode by specifying the CHAR or SF primary or line command.

When in Multi Record Formatted mode, the UP and DOWN commands scroll through the records in the file, and the LEFT and RIGHT commands scroll through the formatted fields within the records displayed on the screen.

To insert, delete, or repeat segments while in Multi Record Formatted mode, use the INSERT, DELETE, and REPEAT primary or line commands.

**Locate Fields when Editing in Formatted Mode**

When editing an IMS database in either Single or Multi Record Formatted mode, reposition the display of the current record to a specific field by using the F xxxx FIELD primary command. For example:

F ‘STUDENT-NAME’ FIELD

This command positions the current record to the next field whose field name contains the characters STUDENT-NAME.
Display Segments with No Layout in Formatted Mode

When editing an IMS database in either Single or Multi Record Formatted mode, CA File Master Plus for IMS may be unable to locate the record layout for one or more segments. In this case, CA File Master Plus for IMS generates a basic segment, and displays the segment's data using the generated layout. An example follows.

<table>
<thead>
<tr>
<th>Field</th>
<th>Pos</th>
<th>Format</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>01 TEACHER-RECORD</td>
<td>1</td>
<td>C 117</td>
<td>DOROTHY ROPER PHD</td>
</tr>
<tr>
<td>05 TEACHER-DATA-1</td>
<td>36 C</td>
<td>3 C10</td>
<td>SMITH VILLE CT06029860-555-98108 60-555-0823 X109</td>
</tr>
</tbody>
</table>

**Note:** The generated layout displays the key as segname-KEY, and the other contiguous data fields display as a single field. Also, Message CAWL713I, SEGNAME Layout Not Found, appears explaining that CA File Master Plus for IMS generated the displayed layout.
Chapter 7: Using Utility Functions

This chapter describes the extensive range of utilities related to the IMS databases.

This section contains the following topics:
Select Utilities (see page 119)

Select Utilities

To select the utilities that you can perform in the IMS database, use the Utilities Menu. It supports the following functions:

- **EXTRACT** – Extract segments from an IMS database
- **RELOAD** – Load segments from a previous Extract into an IMS database
- **INIT** – Initialize a newly allocated IMS database
- **DBCHART** – Present a graphical representation of the hierarchy of an IMS database
- **SOURCE** – Generate source of an ACB, DBD, MDA or PSB from the load module
- **Ext Layout** – Generate Extract file record layouts

To select the utilities

1. Select UTILITIES from the Main Menu.

   The Utilities Menu screen opens.

   ![Utilities Menu](image)

2. Select the utility you want to perform, and press Enter.

   The corresponding utility screen opens.
Extract an IMS Database

The Extract utility lets you extract segments from an IMS database and write them to a sequential data set. You can reload the extracted segments into an IMS database using the Reload utility. The database types supported are: Fast Path (DEDB and MSDB), HDAM, HIDAM, (S)HISAM, (S)HSAM and logical databases.

To extract segments from and IMS database

1. Select UTILITIES from the Main Menu screen.
   The Utilities Menu screen opens.
2. Select EXTRACT from the menu.
   The Extract IMS Database screen opens.

```
------------- CA File Master Plus for IMS -- Extract IMS Database -------------
COMMAND ===>

IMS Database to Extract:
  IMS Environment  ===> ________ (if static PSBLIB being used)
  PSB or ACB Name  ===> ________ (optional if PSB Name specified)
  DBD Name         ===> ________

Output Extract File:
  Dataset name      ===> 
  Disposition       ===> ___ (NEW or SHR or OLD)
  Extract all Segments ===> Y Y/N (N for Segment Name Selection Screen)
  Execution mode    ===> E S = Submit JCL   E = Edit JCL
                      O = Online

Record Layout for Selection:
  Layout dataset    ===>
  CRL dataset       ===>

Selection Criteria below  or  Selection Criteria Member
  ===>
  ===>
  ===>
  ===>
```

3. Complete the following fields:

**IMS Environment**

Defines the IMS environment to resolve various processing parameters related to the extraction of an IMS database. The name of an IMS environment corresponds to a member name within the IMS environment Parm PDS that is updated using option 0.5.

The IMS environment is defined as a DLI or a BMP environment. The type of IMS environment specifies whether the extract process is executed in DLI mode or within a BMP region.

A wildcarded IMS environment name retrieves a directory of IMS environments matching that wildcard.
PSB or ACB Name

Defines the PSB or ACB Name. If blank, a dynamic PSB for DLI or a dynamic ACB for BMP is generated.

In a DLI environment, the specified PSB name must be a member in a data set within the PSBLIB concatenation specified in the current IMS Environment.

In a BMP environment, the specified ACB name must be a member in a data set within the ACBLIB concatenation specified in the current IMS Environment.

These names can also be a wildcard.

DBD Name

Defines the DBD name to indicate the database for extraction. The DBD name must be a member in a data set within the DBDLIB concatenation specified in the current IMS Environment.

This name can also be a wildcard.

Dataset Name

Defines the sequential data set that receives the segments.

Disposition

Specifies the sequential data set's current disposition.

Values: NEW, SHR, OLD

Extract all Seg Names

Specifies whether to extract all or only a subset of the segment names.

Values: Y (Yes), N (No)

When this field contains N, you will see the Select Segment Screen that allows selection of the segments names that are to be processed.

When this field contains Y, the extract process is performed on all segment names in the database.

Execution mode

Specifies the execution mode.

Values: S (Submit JCL), E (Edit JCL), O (Online JCL)
Layout dataset

Defines the DSN of the record layout data set that contains layouts for segments in this database. This is required only when selection references data by its field name and no CRL defines the layout.

You may enter a wildcarded DSN or a DSN list specification to help locate the DSN you want.

Enter 'FMCONCAT' to select the DSNList that contains the layout concatenations if the layouts are in different PDSs.

Note: For more information about creating concatenated PDSs, see the chapter "Working with the DSNList Directory."

CRL Dataset

Defines the CRL data set to extract the data set using a Custom Record Layout. This data set must contain same-named CRLs as the segment names defined in the DBD. The segments that share same-named CRLs are used. This is required only when selection references data by its field name and no ordinary layout describes the data.

You may enter a wildcarded DSN or a DSN list specification to help locate the DSN you want.

Selection Criteria or Selection Criteria Member

Specifies the selection criteria to filter the IMS database records of the input database. Dynamic Selection is entered free form. If a Selection Criteria Member is used, then this member must be defined in the Selection Criteria PDS, defined in option 0.3, Define and Update ProcessingParms. The Selection criteria member value can also be a wildcard.

The selection criteria are used to specify a filter based on the following types of parameters:

- Condition that evaluates data values in each segment
- Presence of a character string within a segment or specified columns or field name from a record layout
- Limit to the number of IMS database records to be selected
- Use of a cataloged selection criteria parameter member defined using CA File Master Plus for IMS Option 0.3, Define and Update ProcessingParms or Option 5 Filter.
To assist in the entry of the selection, use the `LAYOUT[ROOT | segname]` command. When this is entered on the command line, a screen with the ROOT’s or `segname`'s copybook is displayed. Enter the selection criteria on that screen. If the optional parameter is omitted, a screen with the database's segments is displayed, from which you can select the appropriate segment.

<table>
<thead>
<tr>
<th>Selection Criteria</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>IFREC(segname)</td>
<td>Qualifies subsequent selection criteria to a specific IMS database record. If no IFREC or IFSEG is specified, dynamic selection criteria applies to the ROOT segment. The selected segment along with its entire IMS database record is returned.</td>
</tr>
<tr>
<td>IFSEG(segname)</td>
<td>Qualifies subsequent selection criteria to a specific database segment. If no IFREC or IFSEG is specified, dynamic selection criteria applies to the ROOT segment.  When the segment matches the selection criteria, the segment is selected, along with its children, and all of the segments in its parental path. All children of the segments in the parental path are also selected. No twins of the selected segment or twins of any of the segments in the parental path will be selected, or any of their children. (Twins have the same segment name and exact same parent segment). In addition, the rest of the IMS database record will be selected.</td>
</tr>
<tr>
<td>'TEXAS'</td>
<td>'TEXAS' in any case anywhere in the segment.</td>
</tr>
<tr>
<td>C'TEXAS'</td>
<td>Character string 'TEXAS' anywhere in the segment.</td>
</tr>
<tr>
<td>80 EQ C'NY'</td>
<td>Position 80 – 81 of any segment equals 'NY'.</td>
</tr>
<tr>
<td>STATE-CODE NE 'NY'</td>
<td>Field STATE-CODE not equal 'NY' (requires LAYOUT info).</td>
</tr>
<tr>
<td>STATE-CODE = C'NY' C'TX'</td>
<td>Field STATE-CODE equal to 'NY' or 'TX'.</td>
</tr>
<tr>
<td>80 = C'NY,TX' AND</td>
<td>Position 80-81 equals 'NY' or 'TX' AND.</td>
</tr>
<tr>
<td>100 = C&quot;100,000&quot;</td>
<td>Position 100-106 of any segment equals '100,000'.</td>
</tr>
<tr>
<td>TRAN-DD GT '01' AND TRAN-DD LT '06'</td>
<td>Field TRAND-DD is either '02', '03', '04' or '05'.</td>
</tr>
<tr>
<td>10(4) EQP</td>
<td>Position 10-13 of any segment is a valid packed value.</td>
</tr>
<tr>
<td>21 = P'0'</td>
<td>Position 21 of any segment is a packed '0'.</td>
</tr>
<tr>
<td>100(2) = P'0,1,999'</td>
<td>Position 100-101 of any segment is either P'0', P'1', or P'999'.</td>
</tr>
<tr>
<td>101(20) CO 'NEW YORK'</td>
<td>'NEW YORK' in any case of any segment is found anywhere in position 101-120.</td>
</tr>
<tr>
<td>STARTKEY='56789'</td>
<td>Start segment selection with the root segment whose key is GTEQ to '56789'.</td>
</tr>
</tbody>
</table>
Selection Criteria | Description
---|---
INLIM=5000 | Stop reading/selection after reading 5000 IMS database records.
SELLIM=1000 | Only select 1000 IMS database records which match the specified selection criteria.
80 = C'NY' AND 100 = C'001' | Compound condition (OR also supported).
STATE-CODE EQ C'NY' AND COUNTY-CODE EQ C'001' | Compound condition with fields.

Valid condition relational operators

<table>
<thead>
<tr>
<th>Operator</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>= or EQ</td>
<td>Equal</td>
</tr>
<tr>
<td>EQP</td>
<td>Equal packed value</td>
</tr>
<tr>
<td>EQN</td>
<td>Equal numeric value</td>
</tr>
<tr>
<td>^= or NE</td>
<td>Not equal</td>
</tr>
<tr>
<td>NEP</td>
<td>Not equal packed value</td>
</tr>
<tr>
<td>NEN</td>
<td>Not equal numeric value</td>
</tr>
<tr>
<td>&gt; or GT</td>
<td>Greater than</td>
</tr>
<tr>
<td>&gt;= or GE</td>
<td>Greater than or equal</td>
</tr>
<tr>
<td>&lt; or LT</td>
<td>Less than</td>
</tr>
<tr>
<td>&lt;= or LE</td>
<td>Less than or equal</td>
</tr>
<tr>
<td>CO</td>
<td>Contains (that is, the specified literal is anywhere within the scan length or field)</td>
</tr>
</tbody>
</table>

Multiple literals may be specified by listing the literals or by listing the literal values within apostrophes separated by a comma. Following are some examples of conditions with multiple literal values.

<table>
<thead>
<tr>
<th>Conditions</th>
<th>Multiple Literal Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>80 = C'NY' C'NJ' C'MA'</td>
<td>Segment position 80-81 equals one of the three values.</td>
</tr>
<tr>
<td>80 = C'NY,NJ,MA'</td>
<td>Segment position 80-81 equals one of the three values.</td>
</tr>
<tr>
<td>80 = C&quot;NY,NJ,MA&quot;</td>
<td>Segment position 80-97 equals C'NY,NJ,MA' (with commas).</td>
</tr>
<tr>
<td>100(2) = P'0,1,999'</td>
<td>2-byte packed field in segment position 100 equals one of the three values.</td>
</tr>
<tr>
<td>'abc,123,xyz'</td>
<td>Segment contains one of the three values.</td>
</tr>
<tr>
<td>&quot;abc,123,xyz&quot;</td>
<td>Segment contains value 'abc,123,xyz' (with commas).</td>
</tr>
</tbody>
</table>
When the comparison will be performed on another field within the same segment and not a literal, the part of the condition to the right of the operands specify a numeric field position with the record or a record layout field name.

**Example:**

<table>
<thead>
<tr>
<th>Conditions</th>
<th>Numeric Field Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>80(2) &gt; 84</td>
<td>Position 80-81 is greater than position 84-85.</td>
</tr>
<tr>
<td>STATE-CODE EQ PREV-STATE-CODE</td>
<td>Fields STATE-CODE and PREV-STATE-CODE are equal.</td>
</tr>
</tbody>
</table>

A condition to select segments based on the presence of a character string anywhere within a field uses the CO (contains) relational operator.

**Example:**

101(20) CO 'NEW YORK'—Looks for the character string anywhere in position 101-120.

When looking for a character string anywhere within a segment, you just require the literal specification.

**Example:**

C'NEW YORK'—Looks for 'NEW YORK' (upper case) anywhere in a segment.
C'new york'—Looks for 'new york' (lower case) anywhere in a segment.
C'100,00''—Looks for '100,00' (including comma anywhere in a segment.
'NEW YORK' or 'new york'—Looks for 'new york' (any case) anywhere in a segment.
X'FFFF'—Looks for a hex 'FFFF' anywhere in a segment.
P'0'—Looks for a packed zero (length 1 – 16) anywhere in a segment.
N'S5'—When a field name is provided it looks for a X'05' for a binary field, P'S' for a packed field, and N'S' for a numeric display field. Without a field name it looks for a N'S'.

Specify the starting point for the selection of segments by use of the STARTKEY keyword.

**Example:**

STARTKEY='56789'—Means to select IMS database records whose root key is equal to or greater than '56789'.
To limit the number of IMS database records read or processed for selection, the syntax is:

**Example:**

INLIM($n$)—Says stop reading and selecting IMS database records after reading $n$ IMS database records.

SELLIM($n$)—Says to select $n$ IMS database records that match the specified selection criteria.

**Note:** If SELLIM is greater than INLIM, processing stops after the INLIM value has been reached. If SELLIM is less than INLIM, processing stops when either the SELLIM or INLIM value is reached.

**Allocate a New Sequential File**

To allocate a new sequential file, use the Allocate New Sequential File screen.

**To allocate a new sequential file**

1. Select UTILITIES from the Main Menu.
   
   The Utilities Menu screen opens.

2. Select EXTRACT from the menu.
   
   The Extract IMS Database screen opens.
3. Complete the following fields and press Enter:

- IMS Environment
- PSB or ACB Name/DBD Name
- Disposition. Enter **NEW**.

The Allocate New Seq File screen opens:

```
--------- CA File Master Plus for IMS       Allocate New Seq File ---------
COMMAND  ===>  
New Dataset Name  ===> YOUR.EXTRACT.FILE
Volume serial    ===>  or  Generic unit name  ===> SYSDA

SMS Info:
 Management class  ===>  
 Storage class     ===>  
 Data class        ===>  

Dataset Allocation:
 Space allocation unit  ===> T  'T' Tracks 'C' Cylinders 'B' Blocks
 Primary allocation    ===> 
 Secondary allocation  ===> 0
 Record format         ===> VB
 Record length         ===> 504  Length may change during Extract
 Block size            ===> 0
 Expiration date       ===>  optional (YYYY/MM/DD format)
 Specify multi-volume? ===> N  'Y' to specify multiple volumes
```

4. Complete the following fields, as appropriate:

**New Dataset Name**

Identifies the new data set name. This field is populated with the value from the Extract IMS Database panel's Dataset Name value.

**Volume serial or Generic unit name**

Defines the volume where the data set resides. Specify either the Volume serial field or the Generic unit name field.

If multiple volumes are required, set the Specify multi-volume? field to **Y**.

**Note**: If both fields are left blank, a Generic unit name of SYSDA is used.

**Management Class**

Controls dataset characteristics related to the backup, migration, and retention of the dataset. Updates the 1-to-8-position name of the SMS management class used when allocating the dataset.

**Storage Class**

Controls the storage hardware used for the dataset. Updates the 1-to-8-position name of the SMS storage class used when allocating the dataset.
Data Class
Controls the attributes of the dataset being allocated. Updates the 1-to-8-position name of the SMS data class used when allocating the data set.

Space allocation unit
Specifies the space allocation unit for the sequential file being allocated.
If you enter the first position of one of the valid values, the rest of the space allocation unit appears in the field.
Values: T (Tracks), C (Cylinders), B (Blocks)

Primary allocation
Defines the primary allocation for the sequential file. The amount of space allocated in the primary allocation is the specified number of tracks, cylinders, or blocks, depending on the allocation unit.

Secondary allocation
Defines the secondary allocation amount for the sequential file. The amount of space allocated in each secondary allocation is the specified number of tracks, cylinders, or blocks, depending on the allocation unit.

Record format
Identifies a system-generated record format. This field is a protected field and cannot be updated. The generated record format is required for successful completion of the extract.

Record length
Identifies a system-generated record length. This field is a protected field and cannot be updated.

Block size
Defines the block size for the sequential file being allocated.
For variable blocked or fixed blocked files, the Block size field can be empty or contain zero to allow the system to calculate the optimum block size.

Expiration date
Defines the expiration date in YYYYMMDD format if the sequential file can be deleted after a certain date.

Specify multi-volume?
Specifies whether the sequential file is to be allocated with multiple volumes.
Values: Y (Yes), N (No)

5. Press Enter to validate the entries and allocate a new sequential file.
Allocate Multiple Volumes to the Sequential File

To define the volumes to be allocated to a multi-volume sequential file, use the Sequential File Multiple Volumes screen. This screen opens when the Specify multi-volume? field of the Allocate New Sequential File screen is set to Y.

To specify multiple volumes

1. Select UTILITIES from the Main Menu.
   The Utilities Menu screen opens.
2. Select EXTRACT from the menu.
   The Extract IMS Database screen opens.
3. Complete the following fields and press Enter.
   - IMS Environment
   - PSB or ACB Name/DBD Name
   - Disposition (New)
   The Allocate New Seq File screen opens.
4. Complete the following fields and press Enter.
   - New Dataset Name
   - Volume serial or Generic unit name
   - Space allocation unit
   - Primary allocation
   - Secondary allocation
   - Directory blocks
   - Block size
   - Specify multi-volume? Enter Yes.

The Seq/PDS Mult Vols screen opens.

```
CA File Master Plus for IMS - Seq Mult Vols
COMMAND =>

Enter volumes for data set:
  CAI004 ______ ______ ______ ______ ______ ______
  ______ ______ ______ ______ ______ ______
  ______ ______ ______ ______ ______ ______
  ______ ______ ______ ______ ______ ______
  ______ ______ ______ ______ ______ ______
  ______ ______ ______ ______ ______ ______
  ______ ______ ______ ______ ______ ______
```
5. Enter the volume serials on which the sequential file is allocated.
   **Limits:** 50 volumes

6. Press Enter to validate the entries and return to the Allocate New Sequential File screen.

### Reload an IMS Database

The Reload utility lets you reload segments from an extracted sequential file into a new or existing IMS database. The following database types are supported: Fast Path(DEDB and MSDB), HDAM, HIDAM, (S)HISAM, (S)HSAM, and logical databases.

**To reload the data**

1. Select UTILITIES from the Main Menu.
   - The Utilities Menu screen opens.
2. Select RELOAD from the menu.
   - The Reload IMS Database screen opens.

```
------------------ CA File Master Plus for IMS -- Reload IMS Database ------------------
COMMAND ===>

IMS Database to Reload:
   IMS Environment ===>
   PSB or ACB Name ===> (if static PSB being used)
   DBD Name ===> (optional if PSB Name specified)

Input Extract File:
   Dataset name ===>

Reload all Seg Names ===> Y    Y/N (N for Segment Name Selection Screen)
Reload mode ===> L   L/U (Load or Update mode)
Execution mode ===> E   S = Submit JCL   E = Edit JCL
                     O = Online

Record Layout for Selection:
   Layout dataset ===>
   CRL dataset ===>

Selection Criteria below or Selection Criteria Member ===>

===>
```
3. Complete the following fields:

**IMS Environment**
Defines the IMS environment to resolve various processing parameters related to the reloading of an IMS database. The name of an IMS environment corresponds to a member name within the IMS environment Parm PDS that is updated using option 0.5.

The IMS environment is defined as a DLI or a BMP environment. The type of IMS environment determines whether the reload process is executed in DLI mode or within a BMP region.

A wildcarded IMS environment name retrieves a directory of IMS environments matching that wildcard.

**PSB or ACB Name**
Defines the PSB or ACB Name. If blank, a dynamic PSB for DLI or a dynamic ACB for BMP is generated.

In a DLI environment, the specified PSB name must be a member in a data set within the PSBLIB concatenation specified in the current IMS Environment.

In a BMP environment, the specified ACB name must be a member in a data set within the ACBLIB concatenation specified in the current IMS Environment.

These names can also be a wildcard.

**DBD Name**
Defines the DBD name to indicate the database that will be reloaded. The DBD name must be a member in a data set within the DBDLIB concatenation specified in the current IMS Environment.

This name can also be a wildcard.

**Dataset name**
Defines the sequential data set name that contains the segments to be reloaded.

**Reload All Seg Names**
Specifies whether to reload all or only a subset of the segment names.

*Values*: Y (Yes), N (No)

When this field contains N, you will see the Select Segment Screen that allows selection of the segment names that are to be processed.

When this field contains Y, the reload process is performed on all segment names in the database.
Reload mode

Specifies whether to perform the database reload in either load or update mode.

**Values:** L (load), U (update)

When this field contains L, the uninitialized database is reloaded using the load mode. Load is not valid when using a BMP environment. When this field contains U, the initialized database is reloaded using the update mode.

When the update mode is selected, the Select Replacekey option screen is displayed, as shown in the following panel:

```
---------------- Select Replacekey option ----------------
COMMAND ===> 

REPLACEKEY ===> N N/Y/D

N - Do not replace identically keyed segments
Y - Replace identically keyed segments without deleting their subordinate segments
D - Replace identically keyed segments and delete their subordinate segments
```

Replacekey

Specifies how identically keyed segments are handled.

**Values:** N (do not replace), Y (replace without deleting subordinate segments), D (replace and delete all subordinate segments)

Execution mode

Specifies the execution mode.

**Values:** S (Submit JCL), E (Edit JCL), O (Online JCL)

Layout dataset

Defines the DSN of the record layout data set that contains layouts for segments in this database. This is required only when selection references data by its field name and no CRL defines the layout.

You may enter a wildcarded DSN or a DSN list specification to help locate the DSN you want.

Enter 'FMCONCAT' to select the DSNList that contains the layout concatenations if the layouts are in different PDSs.

**Note:** For more information about creating concatenated PDSs, see the chapter "Working with the DSNList Directory."
CRL dataset

Defines the CRL data set to reload the data set using a Custom Record Layout. This data set must contain same-named CRLs as the segment names defined in the DBD. The segments that share same-named CRLs are used. This is required only when selection references data by its field name and no ordinary layout describes the data.

You may enter a wildcarded DSN or a DSN list specification to help locate the DSN you want.

Selection Criteria or Selection Criteria Member

Specifies the selection criteria to filter the IMS database records of the input database. Dynamic Selection is entered free form. If a Selection Criteria Member is used, then this member must be defined in the Selection Criteria PDS, defined in option 0.3, Define and Update Processing Parms.

The selection criteria are used to specify a filter based on the following types of parameters:

- Condition that evaluates data values in the root segment
- Presence of a character string within a root segment or specified columns or field name from a record layout
- Limit to the number of root segments to be selected
- Use of a cataloged selection criteria parameter member defined using CA File Master Plus for IMS Option 0.3, Define and Update Processing Parms or Option 5 Filter
- To assist in the entry of the selection, use the LAYOUT[ROOT|segname] command. When this is entered on the command line, a screen with the ROOT’s copybook is displayed. Enter the selection criteria on that screen. If the optional parameter is omitted, a screen with the database’s segments is displayed, from which you can select the root-segname.
- The RELOAD operation requires that all selection be applied only against the root segment

<table>
<thead>
<tr>
<th>Selection Criteria</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>IFREC(rootsegname)</td>
<td>Qualifies subsequent selection criteria to a specific IMS database record. If no IFREC or IFSEG is specified, dynamic selection criteria applies to the ROOT segment. The entire IMS database record is reloaded.</td>
</tr>
<tr>
<td>Selection Criteria</td>
<td>Description</td>
</tr>
<tr>
<td>--------------------</td>
<td>-------------</td>
</tr>
<tr>
<td>IFSEG(rootsegname)</td>
<td>Qualifies subsequent selection criteria to a specific database segment. If no IFREC or IFSEG is specified, dynamic selection criteria applies to the ROOT segment. When the segment matches the selection criteria, the segment is selected, along with its children, and all of the segments in its parental path. All children of the segments in the parental path are also selected. No twins of the selected segment or twins of any of the segments in the parental path will be selected, or any of their children. (Twins have the same segment name and exact same parent segment). In addition, the rest of the IMS database record will be selected.</td>
</tr>
<tr>
<td>'TEXAS'</td>
<td>'TEXAS' in any case anywhere in the segment.</td>
</tr>
<tr>
<td>C'TEXAS'</td>
<td>Character string 'TEXAS' anywhere in the segment.</td>
</tr>
<tr>
<td>80 EQ C'NY'</td>
<td>Position 80 – 81 of any segment equals 'NY'.</td>
</tr>
<tr>
<td>STATE-CODE NE 'NY'</td>
<td>Field STATE-CODE not equal 'NY' (requires LAYOUT info).</td>
</tr>
<tr>
<td>STATE-CODE = C'NY' C'TX'</td>
<td>Field STATE-CODE equal to 'NY' or 'TX'.</td>
</tr>
<tr>
<td>80 = C'NY,TX' AND</td>
<td>Position 80-81 equals 'NY' or 'TX' AND.</td>
</tr>
<tr>
<td>100 = C&quot;100,000&quot;</td>
<td>Position 100-106 of any segment equals '100,000'. <strong>Note:</strong> Quotes are required when the search string contains a comma.</td>
</tr>
<tr>
<td>TRAN-DD GT '01' AND TRAN-DD LT '06'</td>
<td>Field TRAND-DD is either '02', '03', '04' or '05'.</td>
</tr>
<tr>
<td>10(4) EQP</td>
<td>Position 10-13 of any segment is a valid packed value.</td>
</tr>
<tr>
<td>21 = P'0'</td>
<td>Position 21 of any segment is a packed '0'.</td>
</tr>
<tr>
<td>100(2) = P'0,1,999'</td>
<td>Position 100-101 of any segment is either P'0', P'1', or P'999'.</td>
</tr>
<tr>
<td>101(20) CO 'NEW YORK'</td>
<td>'NEW YORK' in any case of any segment is found anywhere in position 101-120.</td>
</tr>
<tr>
<td>STARTKEY='56789'</td>
<td>Start segment selection with the root segment whose key is GTEQ to '56789'.</td>
</tr>
<tr>
<td>INLIM=5000</td>
<td>Stop reading/selection after reading 5000 IMS database records.</td>
</tr>
<tr>
<td>SELIM=1000</td>
<td>Only select 1000 IMS database records which match the specified selection criteria.</td>
</tr>
<tr>
<td>80 = C'NY' AND 100 = C'001'</td>
<td>Compound condition (OR also supported).</td>
</tr>
<tr>
<td>STATE-CODE EQ C'NY' AND COUNTY-CODE EQ C'001'</td>
<td>Compound condition with fields.</td>
</tr>
</tbody>
</table>
## Selection Criteria

<table>
<thead>
<tr>
<th>Valid condition relational operators</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>= or EQ</td>
<td>Equal</td>
</tr>
<tr>
<td>EQP</td>
<td>Equal packed value</td>
</tr>
<tr>
<td>EQN</td>
<td>Equal numeric value</td>
</tr>
<tr>
<td>^= or NE</td>
<td>Not equal</td>
</tr>
<tr>
<td>NEP</td>
<td>Not equal packed value</td>
</tr>
<tr>
<td>NEN</td>
<td>Not equal numeric value</td>
</tr>
<tr>
<td>&gt; or GT</td>
<td>Greater than</td>
</tr>
<tr>
<td>&gt;= or GE</td>
<td>Greater than or equal</td>
</tr>
<tr>
<td>&lt; or LT</td>
<td>Less than</td>
</tr>
<tr>
<td>&lt;= or LE</td>
<td>Less than or equal</td>
</tr>
<tr>
<td>CO</td>
<td>Contains (that is, the specified literal is anywhere within the scan length or field)</td>
</tr>
</tbody>
</table>

Multiple literals may be specified by listing the literals or by listing the literal values within apostrophes separated by a comma. Following are some examples of conditions with multiple literal values.

## Conditions

<table>
<thead>
<tr>
<th>Conditions</th>
<th>Multiple Literal Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>80 = C'NY' C'NJ' C'MA'</td>
<td>Segment position 80-81 equals one of the three values.</td>
</tr>
<tr>
<td>80 = C'NY,NJ,MA'</td>
<td>Segment position 80-81 equals one of the three values.</td>
</tr>
<tr>
<td>80 = C&quot;NY,NJ,MA&quot;</td>
<td>Segment position 80-97 equals C'NY,NJ,MA' (with commas).</td>
</tr>
<tr>
<td>100(2) = P'0,1,999'</td>
<td>2-byte packed field in segment position 100 equals one of the three values.</td>
</tr>
<tr>
<td>'abc,123,xyz'</td>
<td>Segment contains one of the three values.</td>
</tr>
<tr>
<td>&quot;abc,123,xyz&quot;</td>
<td>Segment contains value 'abc,123,xyz' (with commas).</td>
</tr>
</tbody>
</table>

When the comparison will be performed on another field within the same segment and not a literal, the part of the condition to the right of the operands can specify a numeric field position with the record or a record layout field name.

**Example:**

<table>
<thead>
<tr>
<th>Conditions</th>
<th>Numeric Field Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>80(2) &gt; 84</td>
<td>Position 80-81 is greater than position 84-85.</td>
</tr>
<tr>
<td>STATE-CODE EQ PREV-STATE-CODE</td>
<td>Fields STATE-CODE and PREV-STATE-CODE are equal.</td>
</tr>
</tbody>
</table>
A condition to select segments based on the presence of a character string anywhere within a field uses the CO (contains) relational operator.

**Example:**

101(20) CO 'NEW YORK'—Looks for the character string anywhere in position 101-120.

When looking for a character string anywhere within a segment, you just require the literal specification.

**Example:**

C'NEW YORK'—Looks for 'NEW YORK' (upper case) anywhere in a segment.
C'new york'—Looks for 'new york' (lower case) anywhere in a segment.
C'100,00'—Looks for '100,00' (including comma anywhere in a segment.
'NEW YORK' or 'new york'—Looks for 'new york' (any case) anywhere in a segment.
X'FFFF'—Looks for a hex 'FFFF' anywhere in a segment.
P'0'—Looks for a packed zero (length 1 – 16) anywhere in a segment.
N'5'—When a field name is provided, it looks for a X'05' for a binary field, P'5' for a packed field, and N'S' for a numeric display field. Without a field name it looks for a N'S'.

Specify the starting point for the selection of segments by use of the STARTKEY keyword.

**Example:**

STARTKEY='56789'—Means to select IMS database records whose root key is equal to or greater than '56789'.

To limit the number of IMS database records read or processed for selection, the syntax is:

**Example:**

INLIM(\(n\))—Says stop reading and selecting IMS database records after reading \(n\) IMS database records.
SELLIM(\(n\))—Says to select \(n\) IMS database records that match the specified selection criteria.

**Note:** If SELLIM is greater than INLIM, processing stops after the INLIM value has been reached. If SELLIM is less than INLIM, processing stops when either the SELLIM or INLIM value is reached.

4. Press Enter to validate the entries.
Chapter 7: Using Utility Functions

Initialize an IMS Database

The INIT utility lets you initialize an uninitialized IMS database. The database types that are supported are: Fast Path (DEDB), HDAM, HIDAM, (S)HISAM, and logical databases.

To initialize an IMS database

1. Select UTILITIES from the Main Menu.  
The Utilities Menu screen opens.
2. Select INIT from the menu.  
The Initialize IMS Database screen opens.

```
------------ CA File Master Plus for IMS  -- Initialize IMS Database  ----------
COMMAND ===> 

IMS Database to Initialize:
IMS Environment ===> ________
DBD Name ===> ________
Execution mode ===> S  

S = Submit JCL
E = Edit JCL
O = Online
```

3. Complete the following fields:

**IMS Environment**

Defines the name of an IMS DLI environment member that contains the IMS system data sets and parameters used for initialization.

BMP environments cannot be referenced when using initialization.

A wildcarded IMS environment name retrieves a directory of IMS environments matching that wildcard.

**DBD Name**

Defines the member name of a DBDLIB for the IMS database that is to be initialized.

A wildcarded member name retrieves a directory of members matching that wildcard. Since the IMS environment is a DLI environment, the member selection list contains the members in the DBDLIB concatenation defined during DLI environment setup.

**Execution mode**

Specifies the execution mode.

**Values:** S (Submit JCL), E (Edit JCL), O (Online JCL)

4. Press Enter to validate the entries.
Display the DBCHART

The DBCHART utility lets you display an IMS database in its hierarchical form as a tree diagram. The database types supported are: Fast Path (DEDB and MSDB), HDAM, HIDAM, (S)HISAM, (S)HSAM, HALDB (PHDAM, PHIDAM and PSINDEX), and logical databases.

To display an IMS database in a hierarchical form

1. Select UTILITIES from the Main Menu.
   The Utilities Menu screen opens.
2. Select DBCHART from the menu.
   The Database Chart for IMS Database screen opens.

```
-------- CA File Master Plus for IMS -- Database Chart for IMS Database -------
COMMAND    
IMSL Database to Chart: 
   IMS Environment    
   DBD Name          
Execution mode      
   S = Submit JCL
   E = Edit JCL
   0 = Online Database Chart
```
3. Complete the following fields:
   
**IMS Environment**

The IMS environment specified is used to determine which DBDLIB or ACBLIB member to use as input to the charting of an IMS database. The name of an IMS environment corresponds to a member name within the IMS Environment Parm PDS (which is updated using option 0.5).

Each IMS environment is defined as either a DLI environment or a BMP environment. If a DLI environment is specified, that DLI environment's DBDLIB data set is used as input to the DBCHART function. If a BMP environment is specified, that BMP environment's ACBLIB data set is used.

**DBD Name**

Defines the member name of a DBDLIB or ACBLIB database description member for the IMS database's for which a hierarchy is to be drawn.

A wildcarded member name retrieves a directory of members matching that wildcard. If the IMS environment is defined as DLI, the member list will contain the members in the DBDLIB concatenation defined during DLI environment setup. Otherwise, the member list will contain members in the ACBLIB concatenation of the specified BMP region.
### Execution mode

Specifies the execution mode.

**Values:** S (Submit JCL), E (Edit JCL), O (Online JCL)

4. Press Enter to validate the entries.

---

**SOURCE Utility**

The source utility lets you generate source code members from ACBs, DBDs, PSBs and MDAs.

**To generate source members**

1. Select UTILITIES from the Main Menu.
   
   The Utilities Menu screen opens.

2. Select SOURCE from the Menu.

   The Source Generation screen opens.

   ![Command Selection Screen](image)
3. Complete the following fields:

**Input ACBLIB, DBDLIB, PSBLIB or MDALIB:**

- **Dataset name**
  
  Defines the PDS that contains the members that will be used to create their source.

- **Member name**
  
  Defines the members that will be used to create their source.

  If you enter an asterisk, all members are processed. Leaving the field blank presents a display of all members, from which you can select the members you want to process.

  Entering a wildcard presents a display of members matching the wildcard from which you can select the ones you want to process.

- **Volume serial**
  
  Defines the volume serial of the data set. This field is mandatory if the data set is uncataloged.

**Output Dataset:**

- **Dataset name**
  
  Defines the PDS that contains the source members for the processed members.

- **Disposition**
  
  Defines the disposition of the output PDS.

  **Values:** NEW (New), SHR (Share), OLD (Old), MOD (Mod)

- **Volume serial**
  
  Defines the volume serial of the data set. This field is mandatory if the data set is uncataloged.

**Execution parameters:**

- **Replace Members**
  
  Defines if current same-named members in the output PDS should be replaced by the new same-named members.

  **Values:** Y (Replace same-named members), N (Do not replace same-named members)

- **Execution mode**
  
  Specifies the execution mode.

  **Values:** S (Submit JCL), E (Edit JCL)

4. Press Enter to validate the entries.
Allocate New PDS – Source Utility

To allocate a new PDS, use the Allocate New PDS screen. This screen opens on entering NEW in the Disposition field for the Output data set.

To allocate new PDS

1. Select UTILITIES from the Main Menu screen.
   The Utilities Menu screen opens.
2. Select SOURCE from the menu.
   The Generate Source screen opens.
3. Complete the following fields, and press Enter.
   - Input dataset
   - Dataset name
   - Member name
   - Output Dataset
   - Dataset name
   - Disposition, Enter NEW
   - Replace Members
   - Execution mode

The Allocate New PDS screen opens.

```
------------ CA File Master Plus for IMS -- Allocate New PDS -----------
COMMAND ===>
New Dataset Name ===> YOUR.GENSOURCE.OUTPUT.PDS
Volume serial or Generic unit name ===> SYSDA
SMS Info:
Management class ===>
Storage class ===>
Data class ===>
Dataset Allocation:
Space allocation unit ==> T 'T' Tracks 'C' Cylinders 'B' Blocks
Primary allocation ===>
Secondary allocation ===>
Directory blocks Required for a PDS
Record format ==> FB
Record length ==> 80
Block size ==> 0
Expiration date optional (YYYY/MM/DD format)
Dataset type optional (PDS or PDSE)
```
4. Complete the following fields:

**New Dataset Name**
Identifies the new data set name. This value is populated with the value from the Output's Dataset Name field.

**Volume serial or Generic unit name**
Defines the volume where the data set resides. You can specify either the Volume serial field or the Generic unit name field.

If multiple volumes are required, set the Specify multi-volume? field to Y.

*Note:* If both fields are left blank, then a generic unit name of SYSDA is used.

**Management Class**
Controls dataset characteristics related to the backup, migration, and retention of the dataset. Updates the 1-to-8-position name of the SMS management class used when allocating the dataset.

**Storage Class**
Controls the storage hardware used for the dataset. Updates the 1-to-8-position name of the SMS storage class used when allocating the dataset.

**Data Class**
Controls the attributes of the dataset being allocated. Updates the 1-to-8-position name of the SMS data class used when allocating the dataset.

**Space allocation unit**
Specifies the space allocation unit for the PDS being allocated.

If you enter the first position of one of the valid values, the rest of the space allocation unit opens in the field.

*Values:* T (Tracks), C (Cylinders), B (Blocks)

**Primary allocation**
Defines the primary allocation amount for the PDS. The amount of space allocated in the primary allocation is the specified number of tracks, cylinders, or blocks depending on the allocation unit.

**Secondary allocation**
Defines the secondary allocation amount for the PDS. The amount of space allocated in each secondary allocation is the specified number of tracks, cylinders, or blocks depending on the allocation unit.

**Directory blocks**
Defines the number of directory blocks you want. The GENSOURCE output file must be a PDS, so a value of zero is invalid.
Record format
Identifies the system-generated record format of fixed block. This is a protected field and cannot be updated.

Record length
Identifies the system-generated record length of 80. This is a protected field and cannot be updated.

Block size
Defines the block size for the PDS being allocated.

Expiration date
Defines the expiration date in YYYYMMDD format if the PDS can be deleted after a certain date.

5. Press Enter to validate the entries and allocate a new PDS.

Generate Extract File Layouts

The extract layout utility creates record layouts that the product uses to view or modify the CA File Master Plus for IMS extract file data in formatted mode. The CA File Master Plus for IMS EXTRACT command creates the extract file.

A unique record layout is created in a PDS for each segment that is defined in the DBD. Each layout is created under the segment name unless a cross-reference member specifies a different layout name. An additional layout CAWK@HDR layout member is created for the extract file's header record, and a Custom Record Layout member is created in the PDS under the DBDname.

Each segment in the extract file is preceded by control information that is used by CA File Master Plus for IMS for processing. The beginning of each layout member created in the PDS has the record format for this control information. This will be followed by the user's layout for the specific segment, which is obtained from the user's layout file.

For detailed information as to when and how to use record layouts and CRLs, see the Batch Reference Guide and ISPF User Guide.

To generate an extract file layout
1. Select UTILITIES from the Main Menu.
   The Utilities Menu screen opens.
2. Select Ext Layout from the menu.
The Generate EXTRACT File Layouts screen opens.

| CA File Master Plus for IMS -- Generate EXTRACT File Layouts |
|-------------------|-------------------|
| COMMAND           |                   |
| IMS Database for Extract Layout: |
| IMS Environment   |                   |
| DBD or ACB Member |                   |
| Input Record Layouts: |
| Layout dataset    |                   |
| CRL dataset       |                   |
| Output Extract Layout PDS File: |
| Dataset name      |                   |
| Disposition       | SHR (NEW or SHR or OLD) |
| Execution parameters |
| Replace Members   | N (Y Replace same-named members) |
| Execution mode    | E (S = Submit JCL, E = Edit JCL, O = Online) |

3. Complete the following fields:

**IMS Environment**

The name of the IMS environment corresponds to a member name within the IMS Environment Parm PDS (which is updated using option 0.5).

The IMS environment specified is used to determine the DSN(s) of the DBDLIB or ACBLIB to be used when generating extract file record layouts for a data set. The DBDLIB or ACBLIB is accessed to determine the segment names within a database.

Each IMS environment is defined as either a DLI environment or a BMP environment. If a DLI environment is specified, that DLI environment's DBDLIB data set is used as input to the extract layout generation process. If a BMP environment is specified, that BMP environment's ACBLIB data set is used as input to the extract layout generation process.

A wildcarded IMS environment value may be entered to request a selection list of the IMS environments that match the wildcard.

**DBD or ACB Member**

Defines the member name of a DBDLIB or ACBLIB database description member for the IMS database's extract layouts to be generated.

A wildcarded member name retrieves a directory of members matching that wildcard. If the IMS environment is defined as DLI, the member list will contain the members in the DBDLIB concatenation defined during DLI environment setup. Otherwise, the member list will contain members in the ACBLIB concatenation of the specified BMP region.
Layout dataset

Defines the DSN of the record layout data set that contains layouts for segments in this database.

You may enter a wildcarded DSN or a DSN list specification to help locate the DSN you want.

Enter 'FMCONCAT' to select the DSNList that contains the layout concatenations if the layouts are in different PDSs.

Note: For more information about creating concatenated PDSs, see the chapter "Working with the DSNList Directory."

CRL dataset

Defines the CRL data set used to generate the extract layouts. This data set must contain CRLs that match the segment names defined in the DBD. The segments that share same-named CRLs are used.

You may enter a wildcarded DSN or a DSN list specification to help locate the DSN you want.

Dataset name

Defines the DSN of the output extract layout PDS that is to be updated by the process that generates record layouts for the extract file.

A member is created in this PDS for each segment in the database. For segments defined by a CRL, a member is created for each layout defined to the segment’s CRL.

A wildcarded DSN retrieves a list of DSNs that match the wildcard.

Disposition

Specifies the output extract layout disposition.

Values: NEW, SHR, OLD, MOD

Replace Members

Defines whether the current same-named members in the output PDS should be replaced by the new same-named members.

Values: Y (Replace same-named members), N (Do not replace same-named members)

Execution mode

Specifies the execution mode.

Values: S (Submit JCL), E (Edit JCL), O (Online JCL)

Press Enter to validate the entries.
Allocate New PDS

To allocate a new PDS, use the Allocate New PDS screen. This screen opens on entering NEW in the Output Extract Layout PDS file’s disposition value.

To allocate new PDS

1. Select UTILITIES from the Main Menu.
   The Utilities Menu screen opens.
2. Select Ext Layout from the menu.
   The Generate EXTRACT File Layouts screen opens.
3. Complete the following fields and press Enter:
   - IMS Environment
   - PSB or ACB Name/DBD Name
   - Disposition. Enter **NEW**.

   The Allocate New PDS screen opens.

```
-------- CA File Master Plus for IMS ---- Allocate New PDS --------
COMMAND ===> New Dataset Name ===> YOUR.EXTRACT.LAYOUT.PDS
          Volume serial           ===>         or Generic unit name    ===> SYSDA
SMS Info: Management class ===>
          Storage class ===> Data class ===>
Dataset Allocation:
          Space allocation unit ===> T          'T' Tracks 'C' Cylinders 'B' Blocks
          Primary allocation ===> Secondary allocation ===> 0
          Directory blocks ===> 100         Required for a PDS
          Record format ===> FB
          Record length ===> 80
          Block size ===> 0
          Expiration date ===> optional (YYYY/MM/DD format)
          Dataset type ===> optional (PDS or PDSE)
```
4. Complete the following fields:

**New Dataset Name**
Identifies the new data set name. This value is populated with the value from the Output Extract Layout PDS data set's name.

**Volume serial or Generic unit name**
Defines the volume where the data set resides. Specify a value for either the Volume serial field or the Generic unit name field.

If multiple volumes are required, set the Specify multi-volume? field to Y.

*Note:* If both fields are left blank, then a Generic unit name of SYSDA is used.

**Management Class**
Controls dataset characteristics related to the backup, migration, and retention of the dataset. Updates the 1-to-8-position name of the SMS management class used when allocating the dataset.

**Storage Class**
Controls the storage hardware used for the dataset. Updates the 1-to-8-position name of the SMS storage class used when allocating the dataset.

**Data Class**
Controls the attributes of the dataset being allocated. Updates the 1-to-8-position name of the SMS data class used when allocating the dataset.

**Space allocation unit**
Defines the space allocation unit for the PDS being allocated.

If you enter the first position of one of the valid values, the rest of the Space allocation unit appears in the field.

*Values:* T (Tracks), C (Cylinders), B (Blocks)

**Primary allocation**
Defines the primary allocation amount for the PDS. The amount of space allocated in the primary allocation is the specified number of tracks, cylinders, or blocks, depending on the allocation unit.

**Secondary allocation**
Defines the secondary allocation amount for the PDS. The amount of space allocated in each secondary allocation is the specified number of tracks, cylinders, or blocks depending on the allocation unit.

**Directory blocks**
Defines the number of directory blocks you want. The Generate Extract file layouts output file must be a PDS, so a value of zero is invalid.
Record format
Identifies a system-generated record format. This is a protected field and cannot be updated.

Record length
Identifies a system-generated record length. This is a protected field and cannot be updated.

Block size
Defines the block size for the PDS being allocated.
For variable blocked or fixed blocked files, the Block size field can be empty or contain zero to allow the system to calculate the optimum block size.

Expiration date
Defines the expiration date in YYYYMMDD format if the PDS can be deleted after a certain date.

5. Press Enter to validate the entries and allocate a new sequential file.
Chapter 8: Printing Data from the IMS Database

This chapter describes the Print function of IMS database. The following databases types are supported:

- (S)HSAM
- (S)HISAM
- HDAM
- HIDAM
- Fast-path (DEDB and MSDB)
- HALDB (PHDAM, PHIDAM, and PSINDEX)
- Secondary index

This section contains the following topics:

Print IMS Database (see page 150)
Print IMS Database

To print data from various IMS database types, use the Print IMS Database screen.

To print an IMS Database
1. Select PRINT from the Main Menu.

The Print IMS Database screen opens.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>IMS Environment</td>
<td>PSB or ACB Name</td>
<td>DBD Name</td>
<td>Print mode</td>
</tr>
<tr>
<td></td>
<td>(if static PSBLIB being used)</td>
<td>(optional if PSB Name specified)</td>
<td>C = Character</td>
</tr>
<tr>
<td>Print all Seg Names</td>
<td>Y/N (N for Segment Name Selection Screen)</td>
<td>S = Single Record Formatted</td>
<td></td>
</tr>
<tr>
<td>Execution mode</td>
<td>S = Submit JCL</td>
<td>E = Edit JCL</td>
<td></td>
</tr>
</tbody>
</table>

2. Complete the following fields:

**IMS Environment**

Defines the IMS environment to resolve various processing parameters used while printing an IMS database. The name of an IMS environment corresponds to a member name within the IMS environment Parm PDS that is updated using option 0.5.

The IMS environment is defined as a DLI or a BMP environment. The type of IMS environment specifies whether the print process is executed in DLI mode or within a BMP region.

The IMS Environment name can be wildcarded.
**PSB or ACB Name**

Defines the PSB or ACB Name. If blank, a dynamic PSB for DLI or a dynamic ACB for BMP is generated.

In a DLI environment, the specified PSB name must be a member in a data set within the PSBLIB concatenation specified in the current IMS Environment.

In a BMP environment, the specified ACB name must be a member in a data set within the ACBLIB concatenation specified in the current IMS Environment.

These names can also be a wildcard.

**DBD Name**

Defines the DBD name to indicate the database for printing. The DBD name must be a member in a data set within the DBDLIB concatenation specified in the current IMS Environment.

This name can also be a wildcard.

**Print mode**

Specifies the print mode.

Values: C (Character), H (Hex), S (Single Record Format)

**Print all Seg Names**

Specifies whether to print selected segment names or all segment names.

Values: Y (Yes), N (No)

Note: When this field contains N, you will see the Select Segment screen that allows selection of the segments names that are to be printed.

When this field contains Y, the print process is performed on all segment names in the database.

**Print limit**

Defines the maximum number of segments to be printed. When the Print Limit field is not entered or equals zero, no limit is placed on the number of segments printed.

**Execution Mode**

Specifies the execution mode.

Values: S (submit JCL), E (edit the JCL)
Layout dataset

Defines the DSN of the record layout data set that contains layouts for segments in this database. This is required only when the selection references data by its field name and no CRL defines the layout.

You may enter a wildcarded DSN or a DSN list specification to help locate the DSN you want.

Enter 'FMCONCAT' to select the DSNList that contains the layout concatenations if the layouts are in different PDSs.

Note: For more information about creating concatenated PDSs, see the chapter "Working with the DSNList Directory."

CRL dataset

Defines the CRL data set to print the data set using a Custom Record Layout. This data set must contain same-named CRLs as the segment names defined in the DBD. The segments that share same-named CRLs are used. This is required only when the selection references data by its field name and no ordinary layout describes the data.

You may enter a wildcarded DSN or a DSN list specification to help locate the DSN you want.

Selection Criteria or Selection Criteria Member

Specifies the selection criteria to filter the IMS database records of the input database. Dynamic Selection is entered free form. If a Selection Criteria Member is used, then this member must be defined in the Selection Criteria PDS, defined in option 0.3, Define and Update Processing Parms. The Selection criteria member value can also be a wildcard.

The selection criteria are used to specify a filter based on the following types of parameters:

■ Condition that evaluates data values in each segment
■ Presence of a character string within a segment or specified columns or field name from a record layout
■ Limit to the number of root segments to be selected
■ Use of a cataloged selection criteria parameter member defined using CA File Master Plus for IMS Option 0.3, Define and Update Processing Parms or Option 5 Filter
■ To assist in the entry of the selection, use the LAYOUT[ROOT|segname] command. When this is entered on the command line, a screen with the ROOT's or segname's copybook is displayed. Enter the selection criteria on that screen. If the optional parameter is omitted, a screen with the database's segments is displayed, from which you can select the appropriate segment
<table>
<thead>
<tr>
<th>Selection Criteria</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>IFREC(segname)</td>
<td>Qualifies subsequent selection criteria to a specific IMS database record. If no IFREC or IFSEG is specified, dynamic selection criteria applies to the ROOT segment. The selected segment along with its entire IMS database record is returned.</td>
</tr>
<tr>
<td>IFSEG(segname)</td>
<td>Qualifies subsequent selection criteria to a specific database segment. If no IFREC or IFSEG is specified, dynamic selection criteria applies to the ROOT segment. When the segment matches the selection criteria, the segment is selected, along with its children, and all of the segments in its parental path. All children of the segments in the parental path are also selected. No twins of the selected segment or twins of any of the segments in the parental path will be selected, or any of their children. (Twins have the same segment name and exact same parent segment). In addition, the rest of the IMS database record will be selected.</td>
</tr>
<tr>
<td>'TEXAS'</td>
<td>'TEXAS' in any case anywhere in the segment.</td>
</tr>
<tr>
<td>C'TEXAS'</td>
<td>Character string 'TEXAS' anywhere in the segment.</td>
</tr>
<tr>
<td>80 EQ C'NY'</td>
<td>Position 80 – 81 of any segment equals 'NY'.</td>
</tr>
<tr>
<td>STATE-CODE NE 'NY'</td>
<td>Field STATE-CODE not equal 'NY' (requires LAYOUT info).</td>
</tr>
<tr>
<td>STATE-CODE = C'NY' C'TX'</td>
<td>Field STATE-CODE equal to 'NY' or 'TX'.</td>
</tr>
<tr>
<td>80 = C'NY,TX' AND</td>
<td>Position 80-81 equals 'NY' or 'TX' AND.</td>
</tr>
<tr>
<td>100 = C&quot;100,000&quot;</td>
<td>Position 100-106 of any segment equals '100,000'.</td>
</tr>
<tr>
<td>TRAN-DD GT '01' AND TRAN-DD LT '06'</td>
<td>Field TRAND-DD is either '02', '03', '04' or '05'.</td>
</tr>
<tr>
<td>10(4) EQP</td>
<td>Position 10-13 of any segment is a valid packed value.</td>
</tr>
<tr>
<td>21 = P'0'</td>
<td>Position 21 of any segment is a packed '0'.</td>
</tr>
<tr>
<td>100(2) = P'0,1,999'</td>
<td>Position 100-101 of any segment is either P'0', P'1', or P'999'.</td>
</tr>
<tr>
<td>101(20) CO 'NEW YORK'</td>
<td>'NEW YORK' in any case of any segment is found anywhere in position 101-120.</td>
</tr>
<tr>
<td>STARTKEY='56789'</td>
<td>Start segment selection with the root segment whose key is GTEQ to '56789'.</td>
</tr>
<tr>
<td>INLIM=5000</td>
<td>Stop reading/selection after reading 5000 IMS database records.</td>
</tr>
<tr>
<td>SELLIM=1000</td>
<td>Only select 1000 IMS database records which match the specified selection criteria.</td>
</tr>
<tr>
<td>80 = C'NY' AND 100 = C'001'</td>
<td>Compound condition (OR also supported).</td>
</tr>
</tbody>
</table>
### Selection Criteria

<table>
<thead>
<tr>
<th>Selection Criteria</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>STATE-CODE EQ C'NY' AND COUNTY-CODE EQ C'001'</td>
<td>Compound condition with fields.</td>
</tr>
</tbody>
</table>

### Valid condition relational operators

- `=` or `EQ` Equal
- `EQP` Equal packed value
- `EQN` Equal numeric value
- `^=` or `NE` Not equal
- `NEP` Not equal packed value
- `NEN` Not equal numeric value
- `>` or `GT` Greater than
- `>=` or `GE` Greater than or equal
- `<` or `LT` Less than
- `<=` or `LE` Less than or equal
- `CO` Contains (that is, the specified literal is anywhere within the scan length or field)

Multiple literals may be specified by listing the literals or by listing the literal values within apostrophes separated by a comma. Following are some examples of conditions with multiple literal values.

<table>
<thead>
<tr>
<th>Conditions</th>
<th>Multiple Literal Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>80 = C'NY' C'NJ' C'MA'</td>
<td>Segment position 80-81 equals one of the three values.</td>
</tr>
<tr>
<td>80 = C'NY,NJ,MA'</td>
<td>Segment position 80-81 equals one of the three values.</td>
</tr>
<tr>
<td>80 = C&quot;NY,NJ,MA&quot;</td>
<td>Segment position 80-97 equals C'NY,NJ,MA' (with commas).</td>
</tr>
<tr>
<td>100(2) = P'0,1,999'</td>
<td>2-byte packed field in segment position 100 equals one of the three values.</td>
</tr>
<tr>
<td>'abc,123,xyz'</td>
<td>Segment contains one of the three values.</td>
</tr>
<tr>
<td>&quot;abc,123,xyz&quot;</td>
<td>Segment contains value 'abc,123,xyz' (with commas).</td>
</tr>
</tbody>
</table>

When the comparison is to be performed on another field within the same segment and not a literal, the part of the condition to the right of the operands can specify a numeric field position with the record or a record layout field name.

**Example:**

<table>
<thead>
<tr>
<th>Conditions</th>
<th>Numeric Field Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>80(2) &gt; 84</td>
<td>Position 80-81 is greater than position 84-85.</td>
</tr>
<tr>
<td>STATE-CODE EQ PREV-STATE-CODE</td>
<td>Fields STATE-CODE and PREV-STATE-CODE are equal.</td>
</tr>
</tbody>
</table>
A condition to select segments based on the presence of a character string anywhere within a field uses the CO (contains) relational operator.

**Example:**

101(20) CO 'NEW YORK'—Looks for the character string anywhere in position 101-120.

When looking for a character string anywhere within a segment, you just require the literal specification.

**Example:**

C'NEW YORK'—Looks for 'NEW YORK' (upper case) anywhere in a segment.
C'new york'—Looks for 'new york' (lower case) anywhere in a segment.
C"100,00"—Looks for '100,00' (including comma anywhere in a segment.
'NEW YORK' or 'new york'—Looks for 'new york' (any case) anywhere in a segment.
X'FFFF'—Looks for a hex 'FFFF' anywhere in a segment.
P'0'—Looks for a packed zero (length 1 – 16) anywhere in a segment.
N'5'—When a field name is provided, it looks for a X'05' for a binary field, P'5' for a packed field, and N'5' for a numeric display field. Without a field name it looks for a N'5'.

The starting point for the selection of segments can be specified by use of the STARTKEY keyword.

**Example:**

STARTKEY='56789'—Means to select IMS database records whose root key is equal to or greater than '56789'.

To limit the number of IMS database records read or processed for selection, the syntax is:

**Example:**

INLIM(n)—Says stop reading and selecting IMS database records after reading n IMS database records.
SELLIM(n)—Says to select n IMS database records that match the specified selection criteria.

**Note:** If SELLIM is greater than INLIM, processing stops after the INLIM value has been reached. If SELLIM is less than INLIM, processing stops when either the SELLIM or INLIM value is reached.

3. Press Enter to validate the entries and print the data.
Chapter 9: Using the Filter Option

This chapter describes the Filter option of CA File Master Plus for IMS.

This section contains the following topics:

Define or Update Selection Criteria (see page 157)
Select Member from Selection Criteria Member Directory (see page 158)
Update Selection Criteria (see page 159)

Define or Update Selection Criteria

To specify the DSN or member name for a selection criteria member to be created or updated, use the Define or Update Selection Criteria screen.

To define or update a selection criteria member

1. Select FILTER from the Main Menu.

   Note: You can also open this screen from the Define and Update Processing Parameters screen.

   To define a new selection criteria member, enter the member name for the new member. To update an existing selection criteria member, either enter the member name, or request a directory of selection criteria members, by entering a wildcarded member name, from which the wanted member can be selected.

   The Define or Update a Selection Criteria screen opens.

   ![Define or Update a Selection Criteria Screen]

   CA File Master Plus for IMS -- Define or Update a Selection Criteria

   COMMAND ==>

   Selection Criteria Dataset:

   DSN ==> 'FM.INST.SELECT'
   Member name ==> ________
2. Complete the following fields:
   
   **DSN**
   
   Defines the DSN of the data set to use as an alternate selection criteria PDS. By default, the selection criteria PDS defined using the Define and Update Processing Parameters screen is displayed, option 0.3.
   
   A wildcarded DSN retrieves a list of data sets from which you select the data set you want.
   
   **Member name**
   
   Defines the member name of the selection criteria member to be created or updated.
   
   A wildcarded member name retrieves a directory of existing members from which you select the member to be updated.
   
3. Press Enter to validate the entries.

**Select Member from Selection Criteria Member Directory**

To select a member to be updated or specify a new member to be added, use the Selection Criteria Member Directory screen.

**To select a member from the selection criteria member directory**

1. Select FILTER from the Main Menu.
   
   The Define or Update a Selection Criteria screen opens.
   
2. Complete the following fields, and press Enter.
   
   - **DSN**
   - **Member name. Leave blank, or enter a wildcard.**
   
3. The SELECT MEMBER TO PROCESS FROM screen opens.

| S | NAME     | DESCRIPTION            | CHANGED   | SIZE | ID |
|  | NEW01    | new01 desc             | 2002/02/02 22:41 | 1    | TECH1 |
|  | SELNEW   | Description for SELNEW | 2002/01/28 23:08 | 5    | TECH1 |
|  | SEL01    | test selection criteria #1 333 | 2002/02/03 19:17 | 3    | TECH1 |
|  | SEL02    | Description for SEL02 Jim | 2002/01/14 18:23 | 6    | TECH1 |
|  | SEL03    | uuu                       | 2001/12/01 22:51 | 1    | TECH1 |
|  | SEL04    | test #4                   | 2002/01/21 22:01 | 1    | TECH1 |
|  | SEL09    | desc for sel09           | 2001/12/27 19:05 | 2    | TECH1 |

************** END OF SELECTION CRITERIA MEMBER LIST **************
**Note:** The selection criteria member directory can be sorted by any of the columns with the primary command `SORT ccccc`, where `cccccc` is at least two characters of the column title name. This command can be followed by either an A or D to sort the column in either ascending or descending order. Ascending is the default value, if omitted.

4. Either enter the primary command `$ mmmmmmm`, where `mmmmmm` is a new or existing member name, or specify `$` for the member represented by the current line item for the following fields:

    **Name**
    Identifies the member name that corresponds to the member in the selection criteria PDS.

    **Description**
    Identifies the nature and use of the selection criteria member.

    **Changed**
    Shows when the selection criteria member was last updated using the selection criteria update process or TSO edit.

    **Size**
    Shows the number of parameter lines in each member.

    **ID**
    Shows the User ID of the last user to update each member using either the selection criteria update process or TSO edit.

5. Press Enter to validate the entries.

**Note:** The LOCATE command can be used to position to a line item according to the value of the column by which the line items are sorted (which is Member name if no SORT commands have been performed). The syntax of the LOCATE command is `L xxx` where `xxx` is the value of the sort sequence column for the wanted line item.

---

**Update Selection Criteria**

To define the parameters that are used to build a member in the Selection Criteria Parm, use the Update Selection Criteria screen. You can also update existing selection criteria or add a new selection criteria using this screen. When the selection criteria update process is complete, the associated member in the selection criteria parameter PDS is created or updated with the specified selection criteria parameters.

Each Selection Criteria Parm member is a cataloged selection criteria, or filter, that describes the rules for selecting the IMS database records to be processed.
To update the selection criteria

1. Select FILTER from the Main Menu.
   The Define or Update a Selection Criteria screen opens.

2. Complete the following fields and press Enter.
   - DSN
   - Member name. Leave blank, or enter a wildcard.
   The Select Member to Process From screen opens.

3. Enter the primary command `S mmmmmmm`, where `mmmmmm` is the member name.
   You can also use the `S mmmmmmm` primary command to specify a new member.
   The Update Selection Criteria screen opens.

4. Specify an action command for the following fields, and press Enter.
   **Name**
   Identifies the member name where this selection condition parameter member is saved.
   **Description**
   Defines the selection criteria. The description must indicate the use of the selection criteria, and should differentiate the member from other selection criteria members.
Start root key value

Defines the root key's value for which processing is to begin.

Values: Character (C'cccccccc', where 'cccccccc' is a 1-to-47-position character value), Hex (X'hhhhhhhhh', where 'hhhhhhhh' is an even number of hexadecimal digits)

Input limit

Defines the number of IMS database records that are to be read from the IMS database.

Selection limit

Defines the number of IMS database records to be selected. When this limit is exceeded, processing is stopped.

Build condition lines?

Specifies whether to build the condition lines to append in the selection condition area of the next screen.

Values: Y (accesses the Selection Criteria Condition screen used to format condition lines to append to the condition lines in the selection condition area of the next screen), N

Layout dataset

Defines the DSN of the record description copy member data set that includes the record layout used to build condition lines for the selection criteria.

You may enter a wildcarded DSN or a DSN list specification to help locate the DSN you want.

Enter 'FMCONCAT' to select the DSNList that contains the layout concatenations if the layouts are in different PDSs.

Note: For more information about creating concatenated PDSs, see the chapter "Working with the DSNList Directory."

Action

Use the following action commands to make the entry of the selection criteria easier.

I – inserts a blank line item following this line item, where you can enter a new selection condition line,

S – displays the Selection Criteria screen for the selected criteria,

D – deletes the line item,

R – repeats the line item to create another line item immediately following the current line item)
Update Selection Criteria

C – copies the line item to create a new line item in the position specified by a line item action of B (for before) or A (for after)),

M – moves the line item to the position specified by a line item action of B (for before) or A (for after)),

B – indicates that a line item with an action of C (for copy) or M (for move) is to be copied or moved before this line item),

A – indicates that a line item with an action of C (for copy) or M (for move) is to be copied or moved after this line item)

Selection Condition

Specifies the selection criteria to filter the segments IMS database records of the input database. Dynamic Selection is entered free form. The selection criteria are used to specify a filter based on the following types of parameters:

- Condition that evaluates data values in each segment
- Presence of a character string within a segment or specified columns or field name from a record layout
- Limit to the number of root segments to be selected
- Use of a cataloged selection criteria parameter member defined using CA File Master Plus for IMS Option 0.3, Define and Update Processing Parms or Option 5 Filter
- To assist in the entry of the selection, use the LAYOUT[ROOT|segname] command. When this is entered on the command line, a screen with the ROOT's or segname's copybook is displayed. Enter the selection criteria on that screen. If the optional parameter is omitted, a screen with the database's segments is displayed, from which you can select the appropriate segment

<table>
<thead>
<tr>
<th>Selection Criteria</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>IFREC(segname)</td>
<td>Qualifies subsequent selection criteria to a specific IMS database record. If no IFREC or IFSEG is specified, dynamic selection criteria applies to the ROOT segment. The selected segment along with its entire IMS database record is returned.</td>
</tr>
<tr>
<td>IFSEG(segname)</td>
<td>Qualifies subsequent selection criteria to a specific database segment. If no IFREC or IFSEG is specified, dynamic selection criteria applies to the ROOT segment. When the segment matches the selection criteria, the segment is selected, along with its children, and all of the segments in its parental path. All children of the segments in the parental path are also selected. No twins of the selected segment or twins of any of the segments in the parental path will be selected, or any of their children. (Twins have the same segment name and exact same parent segment). In addition, the rest of the IMS database record will be selected.</td>
</tr>
</tbody>
</table>
### Selection Criteria

<table>
<thead>
<tr>
<th>Description</th>
<th>Selection Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>'TEXAS' in any case anywhere in the segment.</td>
<td>'TEXAS'</td>
</tr>
<tr>
<td>Character string 'TEXAS' anywhere in the segment.</td>
<td>C'TEXAS'</td>
</tr>
<tr>
<td>Position 80 – 81 of any segment equals 'NY'.</td>
<td>80 EQ C'NY'</td>
</tr>
<tr>
<td>Field STATE-CODE not equal 'NY' (requires LAYOUT info).</td>
<td>STATE-CODE NE 'NY'</td>
</tr>
<tr>
<td>Field STATE-CODE equal to 'NY' or 'TX'.</td>
<td>STATE-CODE = C'NY' C'TX'</td>
</tr>
<tr>
<td>Position 80-81 equals 'NY' or 'TX' AND.</td>
<td>80 = C'NY,TX' AND</td>
</tr>
<tr>
<td>Note: Quotes are required when the search string contains a comma.</td>
<td>100 = C&quot;100,000&quot;</td>
</tr>
<tr>
<td>Field TRAND-DD is either '02', '03', '04' or '05'.</td>
<td>TRAN-DD GT '01' AND TRAN-DD LT '06'</td>
</tr>
<tr>
<td>Position 10-13 of any segment is a valid packed value.</td>
<td>10(4) EQP</td>
</tr>
<tr>
<td>Position 21 of any segment is a packed '0'.</td>
<td>21 = P'0'</td>
</tr>
<tr>
<td>Position 100-101 of any segment is either P'0', P'1', or P'999'.</td>
<td>100(2) = P'0,1,999'</td>
</tr>
<tr>
<td>'NEW YORK' in any case of any segment is found anywhere in position 101-120.</td>
<td>101(20) CO 'NEW YORK'</td>
</tr>
<tr>
<td>Start segment selection with the root segment whose key is GTEQ to '56789'.</td>
<td>STARTKEY='56789'</td>
</tr>
<tr>
<td>Stop reading/selection after reading 5000 IMS database records.</td>
<td>INLIM=5000</td>
</tr>
<tr>
<td>Only select 1000 IMS database records which match the specified selection criteria.</td>
<td>SELLIM=1000</td>
</tr>
<tr>
<td>Compound condition (OR also supported).</td>
<td>80 = C'NY' AND 100 = C'001'</td>
</tr>
<tr>
<td>Compound condition with fields.</td>
<td>STATE-CODE EQ C'NY' AND COUNTY-CODE EQ C'001'</td>
</tr>
</tbody>
</table>

### Valid condition relational operators

<table>
<thead>
<tr>
<th>Operator</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>= or EQ</td>
<td>Equal</td>
</tr>
<tr>
<td>EQP</td>
<td>Equal packed value</td>
</tr>
<tr>
<td>EQN</td>
<td>Equal numeric value</td>
</tr>
<tr>
<td>^= or NE</td>
<td>Not equal</td>
</tr>
<tr>
<td>NEP</td>
<td>Not equal packed value</td>
</tr>
<tr>
<td>NEN</td>
<td>Not equal numeric value</td>
</tr>
<tr>
<td>&gt; or GT</td>
<td>Greater than</td>
</tr>
<tr>
<td>&gt;= or GE</td>
<td>Greater than or equal</td>
</tr>
<tr>
<td>&lt; or LT</td>
<td>Less than</td>
</tr>
<tr>
<td>&lt;= or LE</td>
<td>Less than or equal</td>
</tr>
<tr>
<td>CO</td>
<td>Contains (that is, the specified literal is anywhere within the scan length or field)</td>
</tr>
</tbody>
</table>
Multiple literals may be specified by listing the literals or by listing the literal values within apostrophes separated by a comma. Following are some examples of conditions with multiple literal values.

<table>
<thead>
<tr>
<th>Conditions</th>
<th>Multiple Literal Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>80 = 'NY', 'NJ', 'MA'</td>
<td>Segment position 80-81 equals one of the three values</td>
</tr>
<tr>
<td>80 = 'NY,NJ,MA'</td>
<td>Segment position 80-81 equals one of the three values</td>
</tr>
<tr>
<td>80 = &quot;NY,NJ,MA&quot;</td>
<td>Segment position 80-97 equals 'NY,NJ,MA' (with commas)</td>
</tr>
<tr>
<td>100(2) = '0,1,999'</td>
<td>2-byte packed field in segment position 100 equals one of the three values</td>
</tr>
<tr>
<td>'abc,123,xyz'</td>
<td>Segment contains one of the three values</td>
</tr>
<tr>
<td>&quot;abc,123,xyz&quot;</td>
<td>Segment contains value 'abc,123,xyz' (with commas)</td>
</tr>
</tbody>
</table>

When the comparison is to be performed on another field within the same segment and not a literal, the part of the condition to the right of the operands can specify a numeric field position with the record or a record layout field name.

**Example:**

<table>
<thead>
<tr>
<th>Conditions</th>
<th>Numeric Field Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>80(2) &gt; 84</td>
<td>Position 80-81 is greater than position 84-85.</td>
</tr>
<tr>
<td>STATE-CODE EQ PREV-STATE-CODE</td>
<td>Fields STATE-CODE and PREV-STATE-CODE are equal.</td>
</tr>
</tbody>
</table>

A condition to select segments based on the presence of a character string anywhere within a field uses the CO (contains) relational operator.

**Example:**

101(20) CO 'NEW YORK'—Looks for the character string anywhere in position 101-120.
When looking for a character string anywhere within a segment, you just require the literal specification.

**Example:**
- C'NEW YORK'—Looks for 'NEW YORK' (upper case) anywhere in a segment.
- C'new york'—Looks for 'new york' (lower case) anywhere in a segment.
- C"100,00"—Looks for '100,00' (including comma anywhere in a segment.
- NEW YORK' or 'new york'—Looks for 'new york' (any case) anywhere in a segment.
- X'FFFF'—Looks for a hex 'FFFF' anywhere in a segment.
- P'0'—Looks for a packed zero (length 1 – 16) anywhere in a segment.
- N'5'—When a field name is provided, it looks for a X'05' for a binary field, P'5' for a packed field, and N'5' for a numeric display field. Without a field name it looks for a N'5'.

The starting point for the selection of segments can be specified by use of the STARTKEY keyword.

**Example:**
- STARTKEY='56789'—Select IMS database records whose root key is equal to or greater than '56789'.

To limit the number of IMS database records read or processed for selection, the syntax is:

**Example:**
- INLIM(n)—Stops reading and selecting IMS database records after reading n IMS database records
- SELIM(n)—Selects n IMS database records that match the specified selection criteria

**Note:** If SELIM is greater than INLIM, processing stops after the INLIM value has been reached. If SELIM is less than INLIM, processing stops when either the SELIM or INLIM value is reached.

### Build a Selection Criteria Condition

To define conditions for a Selection Criteria Parm, use the Selection Criteria condition screen. This screen presents a formatted display of the fields in the record layout and allows you to build conditions by specifying the operand and literal value for a field.

**Note:** When multiple conditions are entered, they are assumed to have a Boolean of AND, but the Boolean operator can be updated on the Update Selection Criteria condition screen.
To build a selection criteria condition

1. Select FILTER from the Main Menu.
   The Define or Update a Selection Criteria screen opens.

2. Complete the following fields, and press Enter.
   - DSN
   - Member name. Leave blank, or enter a wildcard.
   The SELECT MEMBER TO PROCESS FROM Directory screen opens.

3. Enter the primary command `S mmmmm`, where `mmmmmm` is the member name.
   You can also use the `S mmmmm` primary command to specify a new member.
   The Update Selection Criteria screen opens.

4. Complete the following fields, and press Enter.
   - Description
   - IMS Environment
   - DBDname
   - Select all Seg Names?
   - Build condition lines?. Enter `Y` to access the Selection Criteria Condition screen.
   - Layout dataset

   The Segment dataset opens.

<table>
<thead>
<tr>
<th>Segment Name</th>
<th>Cond</th>
</tr>
</thead>
<tbody>
<tr>
<td>STUDENT</td>
<td></td>
</tr>
<tr>
<td>SUBJECT</td>
<td></td>
</tr>
<tr>
<td>TEACHER</td>
<td></td>
</tr>
<tr>
<td>CLASS</td>
<td></td>
</tr>
<tr>
<td>HISTORY</td>
<td></td>
</tr>
<tr>
<td>TRANSCRIPT</td>
<td></td>
</tr>
<tr>
<td>ATTEND</td>
<td></td>
</tr>
</tbody>
</table>

************************* End of Segments ***************************
5. Specify S in the action field to select the segment for which the condition is entered.

The Selection Criteria Condition screen opens.

<table>
<thead>
<tr>
<th>FIELD</th>
<th>FMT</th>
<th>LEN</th>
<th>OP</th>
<th>Compare Value or Field Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>01 STUDENT-SEGMENT</td>
<td>A</td>
<td>247</td>
<td></td>
<td></td>
</tr>
<tr>
<td>05 STUDENT-ID</td>
<td>N</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>05 STUDENT-NAME</td>
<td>A</td>
<td>30</td>
<td></td>
<td></td>
</tr>
<tr>
<td>05 STUDENT-CURR-GRD-LEVEL</td>
<td>N</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>05 STUDENT-CURR-SEMESTER</td>
<td>N</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>05 STUDENT-ADDR</td>
<td>A</td>
<td>47</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10 STUDENT-STREET</td>
<td>A</td>
<td>25</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10 STUDENT-CITY</td>
<td>A</td>
<td>15</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10 STUDENT-STATE</td>
<td>A</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10 STUDENT-ZIP-CODE</td>
<td>A</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>05 STUDENT-HOME-PHONE</td>
<td>A</td>
<td>12</td>
<td></td>
<td></td>
</tr>
<tr>
<td>05 STUDENT-EMERGENCY-CON</td>
<td>A</td>
<td>50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10 STUDENT-CONTACT-PERS</td>
<td>A</td>
<td>30</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10 STUDENT-CONTACT-PHONE</td>
<td>A</td>
<td>20</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The screen displays the following information for each condition:

**FIELD**

Identifies the field level number and field name with indentation to indicate the hierarchy of fields.

**FMT**

Identifies the field format.

**Values:** A (alphanumeric), N (zoned numeric), P (packed), B (binary), and F (floating point)

**LEN**

Identifies the length of each field in bytes.

6. Complete the following fields:

**OP**

Defines the operand for a comparison literal field value on the line corresponding to the field name that is to be evaluated.

**Values:**

= or EQ - Equal

^= or NE - Not Equal

> or GT - Greater than
< or LT    - Less than
>= or GE    - Greater than or Equal
<= or LE    - Less than or Equal

CO (Contains, that is, the specified literal is anywhere in the field)

**Compare Value or Field Name**

Defines the literals or the name of a field to which this field is to be compared.
The following rules apply:

- Alphanumeric literals contain a value within quotes. The first quote can be preceded by C (for example, C’a’) to indicate that the compare is to be performed on exactly what is within the quotes, by T (such as, T’Jim’) to indicate that differences in upper and lowercase are to be ignored, or X (for example, X’FF’) to indicate a hex value.

- Numeric values can be entered without quotes or within quotes preceded by a designation of the field format (such as P’0’). The field format is not required if the value is entered without quotes.

**Example**

C’FL’ | X’FF’ | T’Robert’ | ’Robert’ (Alphanumeric literal)
12345 | P’12345’ (Numeric Value)
C’FL’ C’MA’ | ’FL’ ’MA’ (Multiple literal)

7. Press End, F3, until the Filter member is saved.
Chapter 10: Working with Record Layouts

Record layouts provide a powerful symbolic view of the database’s data for both segment selection and formatted data display. For segment selection, record layouts provide a simple symbolic method for entering selection conditions using field definitions instead of offsets and data types. For displaying data, they add context and clarity by separating data into individual fields, and formatting the value of each field based on its definition.

CA File Master Plus for IMS supports two basic types of record layouts, ordinary layouts and Custom Record Layouts.

This section contains the following topics:

- Ordinary Layouts (see page 169)
- Custom Record Layouts (see page 170)
- Use Layout Functions (see page 171)
- How to Create or Update a Custom Record Layout (see page 176)
- Selection Condition Creation (see page 185)

Ordinary Layouts

An ordinary layout is a COBOL or PL/I record definition, the kind defined in a copy member compiled in a COBOL or PL/I application program. Use an ordinary record layout wherever CA File Master Plus for IMS supports the use of record layouts to map your segment’s data, including the following activities:

- Browsing or editing a database using single-record or multi-record formatted display mode
- Printing data from any online or batch function
- Generating segment selection criteria using the Filter (Option 5) function
- Using dynamic selection criteria for use with any online or batch function
- Defining a Custom Record Layout using the Layout (Option 6) function

When using an ordinary COBOL or PL/I record layout with any CA File Master Plus for IMS function, the layout data set always refers to the library in which the copy member containing the COBOL or PL/I record layout resides. The library can be a partitioned data set or a CA Librarian or CA Panvalet library. The layout member always refers to the copy member containing your COBOL or PL/I record layout.
An ordinary layout member must contain only one COBOL or PL/I record layout. It cannot contain multiple record layouts, procedural statements, or other program source statements. To map data using a record layout embedded in a multi-layout copy member or source program, define a Custom Record Layout.

Because each segment name in a database probably has a unique layout, a database may have several different layouts to map all segments correctly. If any segment name has many different segment types, define a Custom Record Layout for that segment name.

**Custom Record Layouts**

A Custom Record Layout (CRL) defines one or more customized views of the database's data based on one or more ordinary layouts. To create a Custom Record Layout member, use the CA File Master Plus for IMS Layout function. You can use a Custom Record Layout in place of an ordinary layout when running a batch job and in conjunction with an ordinary layout online. The following examples show where a Custom Record Layout is useful:

- Browsing or editing a file using single-record or multi-record formatted display mode
- Printing data from any online or batch function
- Generating record selection criteria using the Filter function
- Using dynamic selection criteria with any online or batch function

You cannot use a Custom Record Layout when defining a Custom Record Layout using the Layout function.

While an ordinary layout provides a single view of a segment name in the database based on a single COBOL or PL/I copy member, a Custom Record Layout supports many different views for each segment. Each view is based on an ordinary COBOL or PL/I segment layout, and each can be customized to meet individual needs. A Custom Record Layout with multiple views can also define the exact data-specific conditions for which each view should be used. The Custom Record Layout defines which fields should be included in formatted displays and which portion of each segment name should be mapped by the layout.

You can use Custom record layouts to accomplish the following tasks:

- Define multiple views for a segment containing more than one segment type
- Control which view should be used for the segment based on content
- Select which fields should be included or excluded from each view
- Use partial record layouts to map only selected portions of records
- Use record layouts residing within multi-layout copy books or source programs
Custom Record Layouts must reside in a partitioned data set with 80-byte records. They may coexist with ordinary COBOL or PL/I record layouts; however, Custom Record Layouts are typically maintained in a separate partitioned data set defined in the CA File Master Plus for IMS Parm Files (Option 0.3) screen.

Because a Custom Record Layout may contain multiple views, it is common for a segment name with different segment types to be displayed using different field definitions. When each view is defined within the Layout function, the selection conditions for which the view should be used are also defined. Selection conditions compare one or more layout fields to other layout fields, within the same segment, or to literal values. Before any segment is formatted, the selection conditions for each view are evaluated. When the conditions for a view are satisfied, that view is used to format the segment's data, showing only the fields included when the view was created.

Use Layout Functions

Use the layout function to perform the following tasks:

- Browse, edit, or display the field definitions for an ordinary COBOL or PL/I record layout
- Create, delete, or update a Custom Record Layout member

To use layout functions

1. Select LAYOUT from the Main Menu.

   The Record Layout screen opens.

   CA File Master Plus for IMS -- Record Layout
   OPTION ===>
   V - View Formatted Record Layout
   U - Update Custom Record Layout
   Record Layout DSN ===> 'CUSTOMER.PROJECT.COPYLIB'
   Member ===> ________

   Previously-used Record Layout DSNs are listed below:
   'PROJECT1.COPYLIB'
   'PROJECT2.COPYLIB'
   'PROJECT3.COPYLIB'
2. Select V (View formatted record layout) or U (Update Custom Record Layout) for the following fields, and press Enter:

**Record Layout DSN**

To view an ordinary COBOL or PL/I record layout, enter the name of the library containing the layout's member. The library can be a partitioned data set, a CA Librarian, or a CA Panvalet library.

To create, delete, or update a Custom Record Layout, enter the name of the partitioned data set containing your Custom Record Layout definitions.

You can also use a wildcard to display a list of data set names.

**Member**

For a formatted record layout (option V), this is the copy member name containing an ordinary COBOL or PL/I record layout.

For a Custom Record Layout (option U), this is the name of the Custom Record Layout member. This name must match the segment name that it will be applied against, unless a segment cross reference member is being used. If a segment cross reference file is being used, this will be the layout name that is defined for the corresponding segment.

If a wildcarded member name is used, then the SELECT MEMBER TO PROCESS FROM screen opens.

**View Formatted Record Layout**

You can view an ordinary COBOL or PL/I record layout.

**To view formatted record layouts**

1. Select LAYOUT from the Main Menu.
   
   The Record Layout screen opens.

2. Enter V in the Record Layout DSN field, and press Enter.
   
   The SELECT MEMBER TO PROCESS FROM screen opens. You can view an ordinary COBOL or PL/I record layout.

**View a Record Layout Member Directory**

Perform the following steps when you want to display a list of members from the library.

**To view a record layout member directory**

1. Select Layout (option 6) from the Main Menu.
   
   The Record Layout screen opens.

2. Enter Option V in the Record Layout DSN field.
3. Enter a blank or wildcard in the Member field, and press Enter.

The Select member to process from screen opens.

<table>
<thead>
<tr>
<th>Name</th>
<th>Msg</th>
<th>Size</th>
<th>Created</th>
<th>Changed</th>
<th>ID</th>
</tr>
</thead>
<tbody>
<tr>
<td>COLUMNS</td>
<td></td>
<td>81</td>
<td>2002/10/25</td>
<td>2003/01/14 13:36:38</td>
<td>TECH1</td>
</tr>
<tr>
<td>CUSTOM1</td>
<td>*Custom Layout</td>
<td>53</td>
<td>2003/03/10</td>
<td>2003/03/19 11:22:19</td>
<td>TECH1</td>
</tr>
<tr>
<td>CUSTOM2</td>
<td>*Custom Layout</td>
<td>26</td>
<td>2003/03/11</td>
<td>2003/03/18 10:25:00</td>
<td>TECH1</td>
</tr>
<tr>
<td>CUSTOM3</td>
<td>*Custom Layout</td>
<td>39</td>
<td>2003/03/22</td>
<td>2003/03/29 15:39:45</td>
<td>TECH2</td>
</tr>
<tr>
<td>CUSTOM4</td>
<td>*Custom Layout</td>
<td>34</td>
<td>2003/03/25</td>
<td>2003/03/25 13:21:25</td>
<td>TECH1</td>
</tr>
<tr>
<td>CUSTOM5</td>
<td>*Custom Layout</td>
<td>32</td>
<td>2003/03/26</td>
<td>2003/03/26 09:24:55</td>
<td>TECH1</td>
</tr>
<tr>
<td>CUSTREC</td>
<td></td>
<td>37</td>
<td>2001/02/09</td>
<td>2003/03/25 11:21:04</td>
<td>TECH1</td>
</tr>
<tr>
<td>CUSTREC2</td>
<td></td>
<td>37</td>
<td>2003/03/03</td>
<td>2003/03/17 14:33:50</td>
<td>TECH1</td>
</tr>
<tr>
<td>CUSTREC3</td>
<td></td>
<td>37</td>
<td>2003/03/07</td>
<td>2003/03/17 14:34:21</td>
<td>TECH1</td>
</tr>
<tr>
<td>CUSTREC4</td>
<td></td>
<td>38</td>
<td>2003/03/17</td>
<td>2003/03/17 22:42:24</td>
<td>TECH1</td>
</tr>
<tr>
<td>FNEW</td>
<td></td>
<td>8</td>
<td>2003/01/23</td>
<td>2003/01/23 15:47:35</td>
<td>TECH1</td>
</tr>
<tr>
<td>FOLD</td>
<td></td>
<td>7</td>
<td>2003/01/23</td>
<td>2003/01/23 15:47:20</td>
<td>TECH1</td>
</tr>
<tr>
<td>GSCCL001</td>
<td></td>
<td>19</td>
<td>2002/12/17</td>
<td>2002/12/17 08:14:33</td>
<td>TECH1</td>
</tr>
<tr>
<td>NUMBERS</td>
<td></td>
<td>117</td>
<td>2002/11/07</td>
<td>2002/11/08 15:56:08</td>
<td>TECH1</td>
</tr>
</tbody>
</table>

The following information is displayed for each layout member:

**Name**
- Identifies the name of each layout member.

**Msg**
- Identifies a Custom Record Layout by the message *Custom Layout.

**Size**
- Identifies the number of records in each layout member.

**Created**
- Identifies the date and time the member was created.

**Changed**
- Identifies the date and time of the last update of each member.

**ID**
- Identifies the userid associated with the last update of each member.
4. Enter one of the following valid line action codes for any layout member:

   **V** – View Formatted Record Layout
   Displays a formatted view of an ordinary COBOL or PL/I record layout. You cannot view Custom Record Layouts using this option.

   **U** – Update Custom Record Layout
   Updates a Custom Record Layout. You cannot update ordinary layouts using this option.

   **B** – ISPF Browse
   Browses a layout file using ISPF BROWSE

To assist you in locating the member you want, the following primary commands are supported by the View Record Layout Member Directory:

- **LOCATE** | L value
- **SORT** column-name [D | A]

The command L or LOCATE, followed by a value, positions to the first member directory entry whose sort sequence field is greater than or equal to the specified value. For example, when the directory list is sorted by the Name column, the L ABC positions the member list to the first member in the list whose member name is greater than or equal to the name ABC.

The SORT command sorts the directory by any of the columns in the directory by entering SORT XXX or SORT XXX Y where 'XXX' is one of the column literals and 'Y' is 'A' for ascending or 'D' for descending. For example, SORT CREATED sorts the directory in descending order of Created Date and SORT ID A sorts the directory in ascending order of User ID.

**View Record Layout Screen**

After the layout member is resolved, the ordinary COBOL or PL/I record layout is formatted, showing the individual field definitions within the layout.

**To view record layout screens**

1. Select LAYOUT from the Main Menu.
   The Record Layout screen opens.
2. Enter option V.
3. Enter the Record Layout DSN field.
4. Enter the member name, and press Enter.

The View Layout screen opens.

```
--- View Layout 'STUDENT' of 'YOUR.IMS.COPYLIB' -------------- Row 1 of 14
COMMAND ==>                                                 SCROLL ==> CSR

<table>
<thead>
<tr>
<th>Field</th>
<th>Fmt</th>
<th>Pos</th>
<th>Len</th>
</tr>
</thead>
<tbody>
<tr>
<td>01 STUDENT-SEGMENT</td>
<td></td>
<td>1</td>
<td>247</td>
</tr>
<tr>
<td>05 STUDENT-ID</td>
<td>N</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>05 STUDENT-NAME</td>
<td>A</td>
<td>6</td>
<td>30</td>
</tr>
<tr>
<td>05 STUDENT-CURR-GRADE-LEVEL</td>
<td>N</td>
<td>36</td>
<td>2</td>
</tr>
<tr>
<td>05 STUDENT-CURR-SEMESTER</td>
<td>N</td>
<td>38</td>
<td>1</td>
</tr>
<tr>
<td>05 STUDENT-ADDR</td>
<td></td>
<td>39</td>
<td>47</td>
</tr>
<tr>
<td>10 STUDENT-STREET</td>
<td>A</td>
<td>39</td>
<td>25</td>
</tr>
<tr>
<td>10 STUDENT-CITY</td>
<td>A</td>
<td>64</td>
<td>15</td>
</tr>
<tr>
<td>10 STUDENT-STATE</td>
<td>A</td>
<td>79</td>
<td>2</td>
</tr>
<tr>
<td>10 STUDENT-ZIP-CODE</td>
<td>A</td>
<td>81</td>
<td>5</td>
</tr>
<tr>
<td>05 STUDENT-HOME-PHONE</td>
<td>A</td>
<td>86</td>
<td>12</td>
</tr>
<tr>
<td>05 STUDENT-EMERGENCY-CONTACT</td>
<td></td>
<td>98</td>
<td>50 Occurs 3</td>
</tr>
<tr>
<td>10 STUDENT-CONTACT-PERSON</td>
<td></td>
<td>98</td>
<td>30</td>
</tr>
<tr>
<td>10 STUDENT-CONTACT-PHONE</td>
<td>A</td>
<td>128</td>
<td>20</td>
</tr>
</tbody>
</table>

********** BOTTOM OF RECORD LAYOUT **********
```

This screen displays the following fields:

Field
Identifies the field name.

Fmt
Identifies the data format from the field definition for each field.

Values: A (Alphanumeric), B (Binary Numeric), N (Numeric Display), P (Packed Numeric)

Pos
Identifies the field's starting position in the segment.

Len
Identifies the length of the field in bytes.

Note: For packed or binary numeric fields, this value is not equal to the number of digits.
How to Create or Update a Custom Record Layout

When you want to create or update a Custom Record Layout, you will want to perform the following tasks:

- Select a member from the directory to process
- Define layout descriptions
- Create a new Custom Record Layout
- Select a layout
- Update a Custom Record Layout

Insert, Delete, or Select a CRL Member from the Directory

Before you create or update a Custom Record Layout, you may need to select a member from the member directory.

To select a member from the directory

1. Select LAYOUT from the Main Menu.
   The Record Layout screen opens.
2. Enter option U.
3. Enter the Record Layout DSN field
4. Enter a wildcard in the Member field, and press Enter.

   Select member to process from.
   'CUSTOMER.PROJECT.COPYLIB'
   --------------------------
   | Row 1 to 3 of 3 |
   COMMAND ===> SCROLL ===> CSR
   I - Insert Custom Record Layout  D - Delete Custom Record Layout Mem
   S - Update Custom record Layout
   Name    Description                                Changed     Size    ID
   ATTEND   Attend CRL                             2005/03/18 10:25:00   26 TECH1
   STUDENT  Student CRL                           2005/03/19 11:22:19   53 TECH1
   SUBJECT  Subject CRL                           2005/03/18 10:25:00   26 TECH1
   *************     End of Custom Record Layout Member List *************

The following information is displayed for each layout member:

Name

Identifies the name of each Custom Record Layout member.

Description

Identifies the layout provided when the Custom Record Layout was created.
How to Create or Update a Custom Record Layout

Chapter 10: Working with Record Layouts

Changed
Identifies the date and time of the last update of each member.

Size
Identifies the number of records in each layout member.

ID
Identifies the user ID associated with the last update of each member.

5. Enter one of the following valid line action codes on any layout member, and press Enter:
   - I – insert – creates a new Custom Record Layout member in the library
   - D – delete – removes an existing member from the library
   - S – update – selects an existing Custom Record Layout for update, and the Custom Record Layout Member Update screen opens.
   - The corresponding action is performed.

Define CRL Descriptions

After you have chosen the member name, you may want to define the layout description, define the record offset (described later), or create the views for the Custom Record Layout.

To define layout descriptions
1. Select LAYOUT from the Main Menu.
   - The Record Layout screen opens.
2. Enter option U.
3. Enter the Record Layout DSN field
4. Enter the Custom Record Layout Member name, and press Enter.
   - The Custom Record Layout Member name must match the segment name that it will be applied against, unless a segment cross reference member is being used. If a segment cross reference file is being used, this will be the layout name that is defined for the corresponding segment.
The Custom Record Layout Member Update screen opens.

If you are creating a new layout, there are initially no views defined, so the scrollable list at the bottom of this screen should contain only one empty line. When updating an existing layout, all existing views should be listed on the bottom portion of this screen.

5. Complete the following fields, and press Enter:

**Custom Layout DSN**

Identifies the DSN of the library in which the Custom Record Layout will be created. This value is retrieved from the Record Layout DSN field.

Enter 'FMCONCAT' to select the DSNList that contains the layout concatenations if the layouts are in different PDSs.

*Note:* For more information about creating concatenated PDSs, see the chapter "Working with the DSNList Directory."

**Custom Layout Member**

Identifies the member name of the CRL. This is retrieved from the Member field.

**Description**

Defines the Custom Record Layout. This can be used for identification. This is a required field.
Record Offset

Defines the offset within the file record data corresponding to the first field in the record layout. The offset value applies to every view defined within the Custom Record Layout.

If the first field in the COBOL or PL/I record layout does not correspond to the start of the record data, enter the record offset that corresponds to the start of the first field in the layout.

The value in this field must be numeric but may contain a leading "+" or "-" sign. If the record layouts contain a record descriptor word for variable-length records, enter '-4' in this field to indicate that the layout begins mapping the record data four bytes before the start of the record.

A

Defines the action for the screen.

Values:

I – Insert—Creates a new view within the Custom Record Layout.

D – Delete—Removes an existing view from the layout. Once deleted, a view cannot be restored.

S – Select—Selects an existing view for update.

Member

Defines the name of a source or copy member containing the ordinary COBOL or PL/I record layout that will be used as the base for the view when inserting a new view into the Custom Record Layout.

Member can also be a wildcard.

The member may contain a single COBOL or PL/I record layout, multiple COBOL or PL/I record layouts, or an entire COBOL or PL/I source program with embedded record layouts. If the member contains more than one record layout, a list of record layouts is displayed. Select a single record layout to be used for the view.

After you enter a view, this field becomes protected and cannot be changed.

Layout DSN

Defines the name of the library containing the ordinary COBOL or PL/I layout member when inserting a new view into the Custom Record Layout. The library may be a partitioned dataset or a CA Librarian or CA Panvalet library.

The value can also be a wildcard, which displays a list of data set names, or can be resolved from a DSN list.

After you add a view, this field becomes protected and cannot be changed.
Default

Defines the default view if you enter Y in this column. The default view is used for formatting file data when none of the selection conditions established for any of the views is matched.

Create a New View

You can create a view for a new Custom Record Layout.

To create a new view

1. Select LAYOUT from the Main Menu.
   The Record Layout screen opens.
2. Enter option U.
3. Enter the Record Layout DSN field.
4. Enter the Custom Record Layout Member name, and press Enter.
   The Custom Record Layout member name must match the segment name that it will be applied against, unless a segment cross reference member is being used. If a segment cross reference file is being used, this will be the layout name that is defined for the corresponding segment.
   The Custom Record Layout Member Update screen opens.
5. Complete the following fields as described in the Define Layout Descriptions procedure.
   - Custom Layout DSN
   - Custom Layout Member
   - Description
   - Record Offset, if applicable.
6. Insert a new entry in the list using the I (for insert) line action in the A field. If no views are defined to this Custom Record Layout, a blank entry is displayed. Type in the values.
7. Select an ordinary COBOL or PL/I record layout to be used as the base for this view. This must be a separate member residing in any source or copy library. It can exist by itself as a standalone copy member, or as part of a larger copy member containing multiple record layouts, or even as an embedded layout within an entire COBOL or PL/I program.
8. Enter the library and member names for the record layout selected in the Layout DSN and Member fields.
9. Press Enter to view the layout.
Select a Layout

If the member selected contains more than one record layout, the Layout Selection screen is displayed. Select only one layout to be used from the list provided as the base layout for the new view.

To select a layout

1. Perform steps 1 – 9 of the previous procedure for creating a new view.

2. Select the base layout for the new view by typing S in the line action column next to the wanted record.

3. Press Enter to select that record layout.

Update a Custom Record Layout

After the layout record has been resolved, you can perform the following tasks to update the layout:

- Define the data-specific selection conditions under which this layout view should be used to format file data
- Identify which fields should be included in formatted displays
To update a Custom Record Layout

1. Follow steps 1 through 3 of the Select a Layout procedure.

The Custom Layout Entry Field Update screen opens.

<table>
<thead>
<tr>
<th>FIELD</th>
<th>FMT</th>
<th>LEN</th>
<th>A/O</th>
<th>OP</th>
<th>Compare Value or Field Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>STUDENT-SEGMENT</td>
<td>A</td>
<td>247</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STUDENT-ID</td>
<td>N</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STUDENT-NAME</td>
<td>A</td>
<td>30</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STUDENT-CURR-GR-LEV</td>
<td>N</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STUDENT-CURR-SEMESTER</td>
<td>N</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STUDENT-ADDR</td>
<td>A</td>
<td>47</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STUDENT-STREET</td>
<td>A</td>
<td>25</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STUDENT-CITY</td>
<td>A</td>
<td>15</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STUDENT-STATE</td>
<td>A</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STUDENT-ZIP-CODE</td>
<td>A</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STUDENT-HOME-PHONE</td>
<td>A</td>
<td>12</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The screen displays the following information:

**Custom Layout DSN**

Displays the dsname of the library where the Custom Record Layout will be created.

**Custom Layout Member**

Displays the member name of the Custom Record Layout.

**Description**

Displays a brief free-format description of the Custom Record Layout that can be used for identification.

**Custom Layout Entry**

Displays the library and member name for the layout being displayed on this screen.

**Field**

Displays the dsname of the library where the Custom Record Layout has been created.
FMT
Displays the data format from the field definition for each field.

Values:
A – Alphanumeric
B – Binary Numeric
N – Numeric Display
P – Packed Numeric

LEN
Displays the length of the field in bytes.

Note: For packed or binary numeric fields, this value is not equal to the number of digits.

2. Complete the following fields, and press Enter:

A
Defines the action for the screen.

Values:
S – Select Field—Selects a field to be included in the view
SS – Select Block—Selects a block of fields. Enter SS in this column on the first and last rows of the block.
X – Unselect Field—Excludes a field from the view. Excluding a field does not remove the field from the layout file, nor does it affect the position or size of any other fields. It simply prevents the excluded field from being displayed when the file data is formatted using this view.
XX – Unselect Block—Excludes a block of fields. Enter XX in this column on the first and last rows of the block.

A/O
Defines multiple selection conditions using an AND or an OR relationship when more than one condition is defined. The AND or OR joins a condition to the previous condition.

Values:
Blank – When more than one condition is defined, then the default value of AND is used. Otherwise, it defines a single condition for a view.
AND or OR – Joins a condition to the previous condition.
AND – Specifies that both the conditions must be true.
OR – Specifies that either one of both the conditions must be true.
OP

Defines a selection condition for this view.

Values:

-  = or EQ - Equal
- ^= or NE - Not Equal
- > or GT - Greater than
- < or LT - Less than
- >= or GE - Greater than or Equal
- <= or LE - Less than or Equal
- CO (Contains, that is, the specified literal is anywhere in the field)

Compare Value or Field Name

Defines a selection condition. The condition can be either a field name or one or more literal values to which the field is compared using the operator defined in the OP column.

A literal value may be enclosed in apostrophes or quotes, and it may contain a leading type indicator. If the literal contains an apostrophe, then it must be enclosed in quotes. If the literal contains a quote, then it must be enclosed in apostrophes. If the literal contains a comma, then it must be enclosed in either apostrophes or quotes.

Valid type indicator values:

- C – Case-sensitive character data
- P – Packed numeric data
- T – Not case-sensitive character data
- X – Hexadecimal data

If no type indicator is specified, the type of the field with which the literal is being compared will be assumed.

Literals are padded to match the size of the field to which they are being compared. Numeric literals are padded on the left with zeros, while all other literals are padded on the right with blanks.

To specify multiple literal values, separate them by commas or spaces.
Selection Condition Creation

For each view, you define the selection conditions for which the view will be used. When database segments are formatted using either single-record or multi-record formatting mode, the selection conditions are evaluated for each segment to determine, based on the segment data, which view should be used.

Selection conditions are evaluated in the order in which the views are defined to the Custom Record Layout. When the selection conditions are met for any view, that view is used to format the data, showing only those fields included in the view.

Comparing any field in the record layout with either another field or one or more literal values, creates a selection condition. Use the fields to the right of the field definition to define selection conditions.

Example: Simple Condition

For a simple condition involving only one field, enter a valid operator in the OP column and one or more comparison values in the Compare Value column.

For example, if you want to use this view when STUDENT segments whose STUDENT-GRADE-LEVEL is 12, then enter EQ in the OP column next to STUDENT-GRADE-LEVEL and 12 in the Compare Value column, to create the following IF condition:

IF(STUDENT, STUDENT-GRADE-LEVEL EQ 12)

Example: Complex Condition

For complex conditions involving more than one field, fill in the same condition columns for each of the fields, then join the conditions by entering AND or OR in the A/O column.

For example, if you want to limit the use of this view to include STUDENT segments that contain a STUDENT-CITY value of C'ELLINGTON', then you would enter AND in the A/O column for STUDENT-CITY and C'ELLINGTON' for its value. This results in the following IF condition.

IF(STUDENT, STUDENT-GRADE-LEVEL, EQ, 12),

AND(STUDENT, STUDENT-CITY, EQ, C 'ELLINGTON ')
The resulting CRL looks like the following screen:

```
-------- CA File Master Plus for IMS -- Custom Layout Entry Field Update --------
COMMAND ===>                                                  SCROLL ===> CSR

Custom Layout DSN    ===> 'FM.INST.CRL'
Custom Layout Member ===> STUDENT
Description           ===> Seniors living in Ellington
Custom Layout Entry   ===> 'YOUR.COPYLIB'(STUDENT)

Line Actions:  S/SS - Select Field/Block       X/XX - Unselect Field/Block

A       FIELD                  FMT   LEN A/O OP Compare Value or Field Name
__ 01 STUDENT-SEGMENT          A    247 ___ __ ________________________________
__  05 STUDENT-ID               N      5 ___ __ ________________________________
__  05 STUDENT-NAME             A      30 ___ __ ________________________________
__  05 STUDENT-CURR-GRADE-LEV   N      2 ___ EQ 12
__  05 STUDENT-CURR-SEMESTER    N      1 ___ __ ________________________________
__  05 STUDENT-ADDR             A      47 ___ __ ________________________________
__  10 STUDENT-STREET           A      25 ___ __ ________________________________
__  10 STUDENT-CITY             A      15 ___ ___ AND EQ C'ELLINGTON'
__  10 STUDENT-STATE            A       2 ___ __ ________________________________
__  10 STUDENT-ZIP-CODE         A       5 ___ __ ________________________________
__  05 STUDENT-HOME-PHONE       A     12 ___ __ ________________________________
```

The number of conditions or literal values that can be entered has no limits.

**Example: Multiple Values**

You can also enter multiple values for a single field. In this case these values are ORed. For example, enter EQ in the OP column next to STUDENT-STATE, and NY,CT in the Compare Value column to create the following IF condition:

```
IF(STUDENT,STUDENT-STATE,EQ,C'NY')
OR(STUDENT,STUDENT-STATE,EQ,C'CT')
```
The resulting CRL looks like the following screen:

```
COMMAND ====>                      SCROLL ====> CSR

Custom Layout DSN ===> 'FM.INST.CRL'
Custom Layout Member ===> STUDENT
Description ===> STUDENTS in NY or CT
Custom Layout Entry ===> 'YOUR.COPYLIB'(STUDENT)

Line Actions:  S/SS - Select Field/Block    X/XX - Unselect Field/Block

<table>
<thead>
<tr>
<th>FIELD</th>
<th>FMT</th>
<th>LEN</th>
<th>A/O</th>
<th>OP</th>
<th>Compare Value or Field Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>STUDENT-SEGMENT</td>
<td>A</td>
<td>247</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STUDENT-ID</td>
<td>N</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STUDENT-NAME</td>
<td>A</td>
<td>30</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STUDENT-CURR-GRADE-LEV</td>
<td>N</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STUDENT-CURR-SEMESTER</td>
<td>N</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STUDENT-ADDR</td>
<td>A</td>
<td>47</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STUDENT-STREET</td>
<td>A</td>
<td>25</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STUDENT-CITY</td>
<td>A</td>
<td>15</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STUDENT-STATE</td>
<td>A</td>
<td>2</td>
<td></td>
<td></td>
<td>EQ NY, CT</td>
</tr>
<tr>
<td>STUDENT-ZIP-CODE</td>
<td>A</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STUDENT-HOME-PHONE</td>
<td>A</td>
<td>12</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
```

Following are some other valid multiple value entries:

<table>
<thead>
<tr>
<th>Compare Value</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>NY, CT</td>
<td>T'NY or T'CT</td>
</tr>
<tr>
<td>NY CT</td>
<td>T'NY' or T'CT'</td>
</tr>
<tr>
<td>C'NY', CT'</td>
<td>C'NY' or C'CT'</td>
</tr>
<tr>
<td>C'NY',T'CT'</td>
<td>C'NY' or T'CT'</td>
</tr>
</tbody>
</table>

If none of the selection conditions defined for any of the views is met for any file record, the default view will be used for formatting. If no default view has been established, the data will be formatted using the CA File Master Plus for IMS generated layout.

**Field-Level Inclusion and Exclusion**

Each view can define which fields from the base layout to include when the segment is formatted.

When creating a new view, the default is to include all fields. Use the Unselect (X or XX) line action to remove fields from the view, or the Select (S or SS) line action to add fields previously removed.

While viewing the list of fields in the view, only those fields that are included in the view are highlighted. Those that are excluded are shown as dim.
Excluding a field does not remove the field from the layout definition, or affect the record position or length of any other field in the layout. It simply prevents a field from being displayed when the segment data is formatted.

Field-level selection is not required for any view.
Chapter 11: Working with the DSN List Directory

This chapter describes the DSN list directory option of CA File Master Plus for IMS.

This section contains the following topics:

Select a DSN (see page 189)
Use DSN List for Processing (see page 190)
Update a DSN List (see page 191)
Insert a DSN List (see page 192)
Delete a DSN List Member (see page 194)

Select a DSN

To view a list of the DSNs defined to the DSN list Parm PDS, and to select a DSN for processing, use the DSN List Directory screen.

To select a DSN

1. Select DSN LIST from the Main Menu.

   This directory can also be displayed by any of the following methods:

   ■ Select option D from the main menu to access the DSN List facility, and then navigate to other functions for any of the data sets in any of the DSN Lists.

   ■ Enter D into any panel field where a data set name is specified, to use the DSN List facility to locate the DSN you want for the panel.

   The DSN Lists screen opens.

   CA File Master Plus for IMS --- DSN LISTS IN 'FM.INST.DSNLIST' Row 1 of 3
   COMMAND ===> SCROLL ===> CSR
   S - Select DSN List U - Update I - Insert D - Delete
   S DSN List Desc
   _ #1 desc for #1
   _ #2 dsn list #2
   _ TEST testdsn list
   ************************************************ END OF DSN LISTS ************************************************
This screen displays the following information:

**DSN List**

Displays the name of the DSN list. This name corresponds to the member name within the DSN List Parm PDS in which the DSN List is stored. The default DSN List Parm PDS is defined using option 0.3, Define and Update Processing Parms.

**Desc**

Displays a description for the DSN list that you created or updated using the Update DSN List screen.

2. Specify $ (selects the DSN List for processing) next to the DSN list you want to process, and press Enter.

Maintenance functions are performed on the selected DSN list.

---

**Use DSN List for Processing**

To invoke various functions for any of the data sets in a DSN list, use the Use DSN List Dataset screen.

**To use a DSN list for processing**

1. Select DSN List from the Main Menu.

   The DSN Lists screen opens.

2. Specify $ (selects the DSN List for processing) next to the DSN list you want to process, and press Enter.

   The Use DSN List Dataset screen opens.

```
----- CA File Master Plus for IMS -- Use DSN List Dataset ---- Row 1 of 6
COMMAND ==>                                                 SCROLL ==> CSR
B - ISPF Browse     E - ISPF Edit     V - ISPF View
DSN List Parm PDS ==> FM3.INST.DSNLIST
DSN List ==> #1
Desc ==> desc for #1

ACT DATA SET
   TECH.WORKPDS
      TECH.WORKPDS2
      TECH.WORKPDS3
      TECH.WORKPDS4
      TECH.JCL_CNTL
   TECH.WORK.MEMLIST

************************** END OF DSNS FOR DSN LIST ***************************
```
This screen displays the following information:

**DSN List PDS**

Identifies the name of the DSN List PDS.

**DSN List**

Identifies the name of the DSN List. This name corresponds to the member name within the DSN List Parm PDS in which the DSN List is stored.

**Desc**

Identifies a description for the DSN list that is entered when the DSN list is created or updated using the Update DSN List screen.

3. Specify B (Use ISPF Browse to browse the data set), E (Use ISPF Edit to edit the data set), or V (Use ISPF View to view the data set) for the data set, and press Enter.

The respective screen, based on the action, opens.

### Update a DSN List

To update and maintain the DSN list, use the Update DSN List screen. You can also browse, edit, view, insert, repeat, delete, move and copy the data sets found within the DSN list using this screen.

**To update the DSN list**

1. Select DSN List from the Main Menu.

   The DSN Lists screen opens.

2. Specify U next to the DSN list you want to process, and press Enter.

   The Update DSN List screen opens.
This screen displays the following information:

**DSN List PDS**
Identifies the name of the DSN List PDS.

**DSN List**
Identifies the name of the DSN List. This name corresponds to the member name within the DSN List Parm PDS in which the DSN List is stored.

**Desc**
Identifies a description for the DSN list that you created or updated using the Update DSN List screen.

3. Optionally, specify any of the following ACTs for a data set, and press Enter.
   
   **E** – Uses ISPF Edit to edit the selected data set.
   **V** – Uses ISPF View to view the selected data set.
   **I** – Inserts a blank entry below the selected data set. Enter the data set name on this blank line. When you enter a wildcarded data set name, another panel opens with all of the catalogued data sets that match the wildcard. From this list, select the ones to add, or by using the command line command S *, select all of the data sets that appear in the list.
   **R** – Repeats the selected data set.
   **D** – Deletes the selected data set.
   **M** – Moves the selected data set to another position within the DSN List.
   **C** – Copies the selected data set to another position within the DSN List.
   **B** – Uses the previous line item to position the placement of the moved or copied data set to the line above the selected line.
   **A** – Uses the next line item to position the placement of the moved or copied data set to the line below the selected line.
   
   The respective action is performed on the selected data set.

**Insert a DSN List**

To insert a new DSN, use the Update DSN List screen (insert mode).

**To insert a DSN list**
1. Select DSN List from the Main Menu.
   
   The DSN Lists screen opens.
2. Specify I next to any DSN list and press Enter.
The Update DSN List screen opens.

```
--- CA File Master Plus for IMS --- Update DSN List --- Row 1 of 1
COMMAND ===> SCROLL ===> CSR

E - ISPF Edit    R - Repeat    C - Copy
V - ISPF View    D - Delete    B - Before
I - Insert       M - Move      A - After

DSN List PDS ===> FM.INST.DSNLIST
DSN List ===> ________
Desc ===> ________________________________________
ACT DATASET
   ___
```

This screen displays the following information:

**DSN List PDS**

Identifies the name of the DSN List PDS.

3. Complete the following fields, and press Enter:

**DSN List**

Defines the name of the DSN List. This name corresponds to the member name within the DSN List Parm PDS in which the DSN List is stored.

Begin the DSN List name with a dollar sign ($) to create a concatenated DSNList in which all PDSs listed are searched to resolve member names.

**Desc**

Defines a description for the DSN list that you created or updated using the Update DSN List screen.

**Dataset**

Defines the data set name to be included in the DSN list.

Concatenated DSN Lists are searched in order, starting with the first PDS listed.

4. Optionally, specify any of the following actions for the data set, and press Enter.

E – Uses ISPF Edit to edit the selected data set.

V – Uses ISPF View to view the selected data set.

I – Inserts a blank entry below the selected data set. Enter the data set on this blank line. When you enter a wildcarded data set name, another panel opens with all of the catalogued data sets that match the wildcard. From this list, select the ones to add, or by using the command line command S *, select all of the data sets that appear in the list.

R – Repeats the selected data set.

D – Deletes the selected data set.
Delete a DSN List Member

M – Moves the selected data set to another position within the DSN List.
C – Copies the selected data set to another position within the DSN List.
B – Uses the previous line item to position the placement of the moved or copied data set to the line above the selected line.
A – Uses the next line item to position the placement of the moved or copied data set to the line below the selected line.

The respective action is performed based on selection.

Delete a DSN List Member

To confirm the deletion of the DSN list member from the DSNLIST data set, use the Confirm Member Delete screen. This screen opens only if the Confirm Member Deletes value is set to Y in setup option 0.3. If this value is N, then the member is deleted without asking for confirmation.

To delete a DSN list member

1. Select DSN LIST from the Main Menu.
   The DSN Lists screen opens.
2. Specify D next to the DSN list you want to process, and press Enter.
   The Confirm Member Delete pop-up screen opens if the Confirm Member Deletes field is set to Y in option 0.1, Processing Defaults and Jobcard.
3. Press Enter to confirm the deletion.

The respective member is deleted from the list.
Index

A
alphanumeric literals, selection criteria condition
  compare value • 165
  list • 26
  list for processing • 190
  select • 189
  update • 57, 77
  update lists • 191

B
BMP environment members select/repeat • 43

C
cataloged filter • 16
  command notations • 11
  commands
    browse primary and line • 62
    edit browse • 82
    edit line • 104
    line • 109
  commonly used data sets, usage • 14
  cross reference members, define segment layout • 34
  custom record layouts
    construction • 26
    create new • 180
    create or update • 176
    member updates • 177
    updating • 181
    usage • 15, 170

D
data set utility • 129
  DBCHART display • 138
  define and update processing parms
    define DSNs, list PDS • 32
    define DSNs, selection criteria • 32
  define or update a selection criteria
    DSN specification • 157
    member specification • 157
    selection criteria member directory, LOCATE command • 158
    selection criteria member directory, SORT command • 158
    using alternate selection criteria PDS • 157
  DLU environment, members select/repeat • 37
  DSNs
    delete list member • 194
    insert list • 192
    delete list • 26
    list for processing • 190
    select • 189
    update • 57, 77
    update lists • 191

E
edit commands
  support line commands • 82
  support primary commands • 82
  extended help main menu • 13

F
field level
  inclusion and exclusion • 187
filter types
  supported, cataloged • 16
  supported, uncataloged • 16
formatted modes, display data • 114
formatted record layout • 25

H
help, extended • 13

I
IMS databases
  browse • 50
  edit • 64
  extract • 120
  handle keyed types • 110
  initialize • 137
  print • 150
  reload • 130
IMS environment members
  delete • 47
  display • 36
  insert new • 37
IMS environments • 36

L
layout functions, using • 171
layouts
  custom record • 26
  formatted record • 25
line commands
  alphabetical listing • 82
create new segments with • 109
multiple record format • 104
LOCATE command, selection criteria member directory • 158

M
Main Menu
  browse and edit • 24
  filter • 25
  help, extended • 13
  help, screen-level • 13
  print • 24
  setup • 24
  utilities • 24
member directory
  select member • 176
  supported commands, LOCATE • 18
  supported commands, SORT • 18

N
numeric values, selection criteria condition, compare value • 165

O
ordinary layouts • 169

P
parameters
  BMP environment members • 43
  define and update processing • 32
  define print output control • 30
  define processing defaults and jobcard • 28
  DLI environment members • 37
  set up and process • 27
PCBs, select • 56, 75
PDS, allocate new • 146
primary commands • 82
primary database hierarchical display • 61, 80
processing defaults and job statements • 28

R
record layouts
  ordinary • 169
  ordinary, mapping record data • 169
  select • 181

usage • 14
view formatted • 172
view screens • 174
record length
  assigning line commands • 114
  decreasing existing record • 114
  increasing existing record • 114

S
screen-level help field level
  help • 13
screens
  Allocate New PDS • 146
  Allocate New Seq File • 126
  BMP Environment Parameters • 43
  Browse IMS Database • 50
  Confirm Member Delete • 19
  Custom Layout Entry Field Update • 181, 185
  Custom Record Layout Member Update • 177
  Custom Record Layout Update Member Directory • 176
  Database DSN Specification • 57, 59, 77
  Define and Update ProcessingParms • 32
  Define or Update a Selection Criteria • 157
  DLI Environment Parameters • 37
  DSN List Directory • 189
  Edit IMS Database • 64
  Extract IMS Database • 120
  Generate EXTRACT File Layouts • 143
  Initialize IMS Database • 137
  Main Menu • 23
  PCB Selection • 56, 75
  Print IMS Database • 150
  Print Output ControlParms • 30
  Processing Defaults and Job statements • 28
  Reload IMS Database • 130
  Segment XREF Parm Update • 34
  Select DSN to Resolve Wildcarded DSN • 17
  SELECT MEMBER TO PROCESS FROM • 158, 172, 176
  Select Secondary Index Database • 59, 78
  Selection Criteria Condition, filter • 165
  Selection Criteria Member Directory • 158
  Seq Mult Vols • 129
  Sequential File Multiple Volumes • 129
  Setup and Processing Parameters • 27
  Specify IMS Environment Type • 37
  Update IMS Environment • 36, 47
Update Segment XREF Parm Member • 34
Update Selection Criteria • 159
Use DSN List Data Set • 190, 191, 192, 194
delete member • 194
insert • 192
select • 190
update • 191
Utilities Menu • 119
View Layout • 174
View Record Layout • 171
secondary index database, select • 59, 78
secondary index hierarchical display • 61, 81
segment key, validate new • 110
segment layout cross
define • 34
selection criteria condition
compare value • 165
numeric • 165
compare value alphanumeric literals • 165
field description • 165
sequential files, allocate new • 126
setup and processing parameters, options • 27

U
update selection criteria
selection criteria parm, building a member • 159
selection criteria parm, field description • 159
utilities
DBCHART • 138
extract • 120
INIT • 137
reload • 130
select • 119
source • 139
utility functions
execution mode, edit JCL • 16
execution mode, online • 16
execution mode, submit JCL • 16

W
wildcarded DSN, usage • 14