DB2 Administration Tool for OS/390

User's Guide

Version 6

SC26-8947-00

Note!

Before using this information and the product it supports, be sure to read the general information under “Notices” on page xiii.

First Edition (June 1999)

This edition applies to DB2 Administration Tool for OS/390, a feature of Version 6 of DB2 Universal Database Server for OS/390 (DB2 UDB for OS/390), 5645-DB2, and to any subsequent releases until otherwise indicated in new editions. Make sure you are using the correct edition for the level of the product.

The technical changes for this edition are summarized under “Summary of Changes to this Book,” which precedes the Introduction. Specific changes are indicated by a vertical bar to the left of a change. A vertical bar to the left of a figure caption indicates that the figure has changed. Editorial changes that have no technical significance are not noted.

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Programming Interface Information

This book is intended to help you use DB2 Administration Tool for OS/390 Version 6.

This book also documents Diagnosis, Modification or Tuning Information, which is provided to help you customize DB2 (R) Admin (hereafter called DB2 Admin).

Warning: Do not use this Diagnosis, Modification or Tuning Information as a programming interface.

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Preface

DB2 Administration Tool for OS/390 is a DB2 catalog administration tool for:

- Database administrators
- System administrators
- Application developers

In the rest of this book, the product is referred to by its short name of DB2 Admin.

How to Use This Guide

You can use this guide selectively:

- If you want to **understand** what DB2 Admin is, read chapters 1 and 4. These chapters introduce the product and show a demo.
- If you want to **use** DB2 Admin, read chapter 3 as well as chapters 1 and 4. Chapter 3 explains how to use the product. Later, during use, you may need to look at the panel chapters to, for example, understand the meaning of specific fields on a panel. The panel chapters (chapters 5 through 13) are primarily for reference although you may want to become familiar with them before using the product.
- If you want to **customize** DB2 Admin, read chapter 2. The customization process assumes you have a basic understanding of DB2 Admin.
- If you want to **extend** existing DB2 Admin applications or **develop** new DB2 Admin applications, read chapter 14. The development process assumes you have a basic understanding of DB2 Admin.

Prerequisite Knowledge

Before using this book, you should understand basic DB2 concepts and facilities and the DB2 administration task.

Summary of Changes to this Book

Version 6, June 1999

This is a summary of the major changes to IBM DB2 Administration Tool for OS/390, Version 6. This version of DB2 Admin includes support for DB2 Version 6 and functional enhancements to DB2 Admin.

Support for DB2 Version 6 includes support for the following functions:

- New and changed DB2 catalog tables and columns.
- DB2 schemas, distinct types, user-defined functions, triggers, and the enhancements to stored procedures. You can create, alter, drop, display, reverse engineer, and work with authorizations on these new DB2 objects.
- Object extensions. DB2 Admin can create, alter, drop, and display the new DB2 objects introduced by this DB2 function. DB2 Admin can also display data in tables that contain BLOB, CLOB, DBCLOB, and ROWID columns. For BLOBs, DB2 Admin retrieves up to 128 bytes per column and displays the data in hex. For CLOBs, DB2 Admin retrieves up to 256 bytes per column. For DBCLOBs, DB2 Admin retrieves up to 128 bytes per column. ROWIDs are also displayed in hex.
- Predictive govenor, which helps eliminate overly lengthy queries on the catalog (or any other) tables by setting error and warning limits.
- Image copy of indexes, which lets you generate JCL for the new copy, RECOVER, REPORT RECOVERY index utilities, and display SYSCOPY rows for indexes.
- Explain enhancements, which let you see the predicted costs for an explained SQL statement.

Enhancements to DB2 Admin include the following:

- Reverse engineering of DB2 objects, which generates the SQL statements necessary to re-create a DB2 object.
- Try and buy feature, which lets you order the DB2 Admin try feature, install it, and use it free for 90 days. You can then order the buy feature if you want to extend your use of DB2 Admin. The buy feature installs on top of the try feature, so you don't have to reinstall DB2 Admin.

Version 1 Release 2, August 1996

This is a summary of the changes to IBM DB2 Administration Tool for MVS/ESA, Version 1 Release 2. This release of DB2 Admin includes support for DB2 Version 4 and several functional enhancements to DB2 Admin.

Note: DB2 Admin operates on DB2 V2.3, V3.1, and V4.1. Depending on the version and release of DB2 that you are using, the catalog content and structure varies. DB2 Admin takes this into account and reflects the appropriate view for the DB2 release installed in your environment.

Support for DB2 Version 4 includes support for the following functions:

- Partition independence
- Type 2 indexes
- Row locking and maximum number of user locks
- Read through locks
- Parallel query processing
- DFSMS Concurrent Copy
- Stored procedures
- Outer join
- Table check constraints
- User-defined default values
- Cancel thread
- Dynamic rules BIND option
- Restrict on DROP
- New References privilege

DB2 Version 4 data sharing is not explicitly supported in this release. DB2 Admin works on a data sharing group member level.

Enhancements to DB2 Admin provide new functions, improved usability, lower overhead costs, better error recovery, and more extensive online help. DB2 Admin enhancements include the following:

- Calculation and display of the hit ratios of buffer pools
- Display of all indexes and index columns for a table
- Improved DB2 Admin print capabilities
- EXPLAIN of long SQL statements
- Reuse of DB2 commands
- User-initiated stop of SQL processing

Chapter 1. What is DB2 Admin?

DB2 Admin is a DB2 catalog administration tool for:

- Database administrators
- System administrators
- Application developers

DB2 Admin is a DB2 application program written in PL/I. It runs under ISPF and uses dynamic SQL to access DB2 catalog tables.

Using DB2 Admin can greatly increase the productivity of the entire DB2 staff. DB2 Admin is interactive, intuitive, easy-to-use, and fast. Its function is comprehensive.

Highlights

A thumbnail sketch of what DB2 Admin can do follows. These functions and their uses are described in more detail in the following section.

- Displays the DB2 catalog quickly and logically
  - Displays any object in the catalog
  - Displays related DB2 objects using special line commands
  - Interprets catalog information
  - Displays the authorization for objects
  - Displays the static SQL statements from application plans and packages
  - Displays the DDL for existing views
- Executes dynamic SQL statements (in many cases, without requiring that you remember SQL syntax)
- Issues DB2 commands against databases and table spaces (without requiring that you remember DB2 command syntax)
- Runs most DB2 utilities
- Allows complex performance and space queries
- Does EXPLAIN functions
- Manages SQL IDs
- Performs various system administration functions, such as updating RLIMITs, displaying threads, and managing DDF
- Allows reverse engineering of DB2 objects
- Supports DB2 predictive govenor
- Lets you extend existing DB2 Admin applications or rapidly develop new applications

DB2 Admin Functions

DB2 Admin is rich in function. This section briefly describes its major functions; more detailed information about the functions can be found in the chapters describing the panels.

Displays the DB2 Catalog Tables

DB2 Admin provides extensive support for displaying the DB2 catalog. The scope of information that can be displayed is described below.

Displays Any Object in the DB2 Catalog: You can retrieve catalog data for any DB2 data object. You can customize the data that is retrieved (you could request, for example, that data be retrieved for all databases owned by THOMAS that have the prefix D402).

DB2 Admin retrieves catalog data using predefined SELECT statements for the more commonly used queries. The rows retrieved from the catalog are displayed using the ISPF table-display service. The display panel can be the DB2 Admin default panel, from which various DB2 Admin line commands can be issued, or a panel tailored by you for the result of a particular SQL SELECT. In the latter case, line commands can issue new SQL calls using information from the columns of rows that have been returned.

Displays Related DB2 Objects Using Line Commands: You can navigate the catalog using DB2 Admin line commands. If, for example, you are on a display panel showing databases, you can use a line command to show all table spaces in one of the databases. Then, from the table spaces panel, you could issue a line command to show authorizations for a table space or show the status of image copies for the table space.

Interprets Catalog Information: You can request detailed information about any object in the DB2 catalog. A request for details about an application plan, for example, returns information like the plan's owner, latest bind time, and number of bytes in the base section.

Shows the Authorization for DB2 Objects: You can retrieve information about the authorizations for all DB2 objects. From an authorization display panel, you can then grant and revoke privileges.

Displays the Static SQL from Application Plans and Packages: You can display the static SQL statements in a plan or a package. This can be useful if you don't have access to a program's source code.

Displays the DDL for Existing Views: You can display the SQL source that created a view. This can be useful if you don't have access to the CREATE VIEW SQL (DDL) statement.

Executes Dynamic SQL Statements

You can issue any dynamic SQL statement from your screen or from a data set. You can build and execute an SQL SELECT statement interactively using line commands.

In addition, you can execute the following SQL statements by filling in required parameters from a panel: GRANT, REVOKE, CREATE, DROP, LABEL ON, COMMENT ON. This lets you execute the statements without knowing the exact SQL syntax; DB2 Admin provides guidance for the required SQL parameters.

Issues DB2 Commands Against Databases/Table Spaces

You can issue any DB2 command against any database or table space that you have selected using DB2 Admin. You can, for example, issue DISPLAY, START, and STOP against a database (assuming you have the authority in DB2 to do so).

DB2 commands are passed to IFI, and the result is displayed in ISPF browse.

Runs DB2 Utilities

You can generate the JCL for DB2 utilities and then run them online. This function applies to the utilities for table spaces, tables, and indexes. You can, for example, generate JCL to run the COPY, REORG, and RUNSTATS utilities for a table space.

The generated JCL consists of a JOB statement, EXEC statement, and all required DD statements. When the JCL is generated, DB2 Admin invokes ISPF edit, which lets you change the JCL, submit it, or copy it to another data set.

Allows Complex Queries

You can run performance and space utilization queries against a database. The data that is returned should help you determine whether you need to:

- Run the RUNSTATS or STOSPACE utilities
- Reorganize or redesign parts of your database or indexes
- Change the locking rule for tables
- Drop an index
- Move tables to separate table spaces
- Extend the primary allocation for a table space or index
- Reduce the size of a table space

Does EXPLAIN Functions

The DB2 Admin EXPLAIN function supports the EXPLAIN statement and provides related support. (The EXPLAIN statement gathers information about the access path DB2 chose to process a query.) Using the EXPLAIN function you can:

- Create a plan table (PLAN_TABLE) in the desired database and table space.
- Issue an SQL EXPLAIN statement and see the resulting rows in the plan table.
- List a plan table to look at rows from previously-executed EXPLAIN statements, or rows from BIND and REBIND operations that were executed with EXPLAIN(YES) specified. With this function, predefined search criteria help you find rows in the plan table (predefined search criteria exist for application plans, DBRMs, collections, and packages). You can see the access path chosen by DB2 to process queries, and the tables and indexes being accessed by DB2.
- Upgrade a plan table to the current version of DB2.
- Create and display the DB2 explain tables.
- Insert and work with DB2 optimizer hints in the plan table.

Manages SQL IDs

You can change the current DB2 SQL ID by entering a new one or selecting one from a list of secondary SQL IDs. DB2 Admin displays a list of SQL IDs that you are allowed to use. The list is created by either simulating or invoking the authorization exit in your system.

Performs System Administration Functions

The system administration functions you can perform using DB2 Admin include:

- Displaying threads
- Displaying and terminating utilities
- Displaying and managing traces
- Displaying and updating RLIMITs, including the predictive govenor limits in DB2
- Displaying and altering buffer pools
- Displaying and setting archive log parameters and archiving the log.
- For DDF (distributed data facility):
  - Displaying and updating the communications data base (CDB)
  - Displaying and canceling distributed threads
  - Displaying active locations
  - Starting and stopping DDF

Allows Reverse Engineering of DB2 Objects

You can reverse engineer the DB2 objects in your database catalog. Reverse engineering generates the SQL statements necessary to re-create a DB2 object.

Typical uses for the DB2 Admin reverse engineering function include:

- Extracting the DDL for an object before changes are made, so that the changes are applied to the current definition and/or are available for fallback purposes.
- Moving DB2 objects to another DB2 subsystem. By using the reverse engineering function (together with the table unload and load functions), objects can be moved after a few manual modifications to the generated SQL and batch jobs.

The SQL statements can be generated using a batch or online job.

Supports DB2 Predictive Govenor

You can use DB2 Admin to display, insert, update, or delete predictive govenor rows in the resource limit tables. Furthermore, if DB2 Admin receives a predictive govenor warning (SQLCODE +495) when running a dynamic SQL statement, DB2 Admin will ask the user (in a prompt) whether the SQL statement should be executed or cancelled. If the predictive govenor estimates that execution of a dynamic SQL statement issued from DB2 Admin will exceed the error limit (SQLCODE -495), DB2 Admin displays an error message and the SQL statement is not run.

Predictive govenor limits can be used to prevent users from running "wild" queries on catalog tables or any other tables being displayed using DB2 Admin. If, for example, a user uses DB2 Admin option 1.T without entering a search argument for OWNER, the SQL statement generated by DB2 Admin will probably run for a long time and be expensive in terms of CPU consumption and the number of I/O operations required. By using predictive govenor limits for the DB2 Admin package, this type of query can be inhibited by setting up either a predictive govenor warning or an error limit in the resource limit table.

Lets You Extend Existing DB2 Admin Applications or Develop New Applications

DB2 Admin can easily be extended to invoke other applications that you use for DB2 administration and application development. The application must be one that can be invoked in an ISPF environment.

Examples of applications you might want to invoke from DB2 Admin include:

- Security tools
- Vendor DB2 utilities
- Storage management tools

DB2 Admin also lets you quickly build new ISPF applications for displaying and maintaining DB2 data. Examples of types of data for which you might build such applications include:

- Application definition data
- DB2 performance data
- Extra security data

A sample application is included with the product to illustrate how you might use DB2 Admin to create new applications.

DB2 Admin Uses

DB2 Admin has many potential uses. This section describes a few of the ways in which DB2 Admin is typically used, and gives examples of specific applications customers have developed.

Explore Databases

DB2 Admin lets you quickly navigate the DB2 catalog and see tables, table columns, and indexes. If you are authorized by DB2, you can also see the content of tables either by doing a simple list of the table or by building SQL statements and executing them against a table.

These DB2 Admin functions make it possible for you to explore unknown databases rapidy or get a quick overview of a database. None of these functions requires that you remember the exact syntax of DB2 commands or SQL statements.

Do Problem Determination

DB2 Admin can be very useful in doing the database administration task of problem determination. With its ability to navigate the catalog and use DB2 commands on objects, DB2 Admin can help you discover, analyze, and fix database problems in a more user-friendly fashion than native DB2.

Develop Small Applications

Rapid development of small applications is possible using DB2 Admin. As you become familiar with the tool, you may find the time it takes to develop small DB2 Admin dialogs greatly reduced.

Examples of possible applications follow:

- If you have a tool at your installation that manipulates DB2 tables, you could develop your own line command to access it from the DB2 Admin panel that displays tables (implementing the line command as an SMP usermod). Then you could invoke the table tool as a natural follow-on to using DB2 Admin.
- Perhaps you'd like to generate more DECLARE statements for a PL/I table than is possible with the DB2 DCLGEN tool. You could write an application to invoke DCLGEN directly from the DB2 Admin panel that displays tables. You could also modify the output you receive from DCLGEN to, for example, meet your installation's standards and requirements.
- You might want to build prototypes of SQL SELECT statements. You can build the statements, test them and, when you are satisfied with them, copy the statements to a data set to include in your application program.
- DB2 Admin can help you maintain any DB2 tables you use for installation standards and special requirements. You could use DB2 Admin to develop a small application that describes all of the applications you have in the system. Or you could use it to display existing tables that, for example, contain information about DB2 plan performance or batch job execution statistics.

Copy Tables From One DB2 to Another

You can use the table utilities that DB2 Admin generates to copy tables from one DB2 system to another. You will need to make a few modifications to the generated JCL.

Security

Although its function is comprehensive, DB2 Admin does not expose the security of the DB2 system. The DB2 Admin user can only do what he or she is allowed to do based on the security requirements specified in the DB2 catalog.

Performance

DB2 Admin uses dynamic SQL to access the DB2 catalog. This ensures that DB2 always uses the most efficient access path to the catalog, provided RUNSTATS statistics are available for the DB2 optimizer.

Before DB2 Admin displays information, it does an SQL commit. This ensures that a DB2 Admin user cannot lock the catalog for long periods of time. If an SQL error occurs, DB2 Admin does a rollback before information is displayed.

DB2 Admin has a default limit of 1000 for fetching rows. This helps limit time-consuming queries. The default of 1000 can be changed for an execution of DB2 Admin if more rows are needed.

DB2 resource limit facilities (RLF) can be used to limit the amount of CPU time a dynamic SQL statement in DB2 Admin can use - either by using the reactive govenor facilities of RLF or by using the predictive govenor facilities in DB2 V6.

Finally, DB2 Admin can run on a copy of the DB2 catalog. Sample jobs are provided with the product to create the copy. The sample jobs include a definition of indexes that is designed for most predefined queries on the catalog. Besides improving performance, running on a copy of the catalog can reduce contention for the catalog.

Online Information

DB2 Admin contains extensive online information. This includes help panels for most tasks, as well as tutorial information.

Hardware Requirements

The machine configuration required for DB2 Admin is the same as that required for DB2 Universal Database Server for OS/390 Version 6.

Software Requirements

DB2 Admin can run on the same software as is required for DB2 Universal Database Server for OS/390 Version 6 (5645-DB2).

DB2 Admin can also run on earlier releases of DB2. The required software in this case is:

- DB2 (one of the following):
  - DATABASE 2 Version 4 for MVS/ESA (5695-DB2)
  - DATABASE 2 Version 5 for OS/390 (5695-DB2)
- ISPF Version 3 Release 3 (5685-054) **or** ISPF Version 4 (5655-042) or subsequent releases
- ISPF/PDF Version 3 Release 3 or subsequent releases (5665-402)
- PL/I (one of the following):
  - OS PL/I Version 2 Release 3 Compiler, Library and Interactive Test Facility (5668-909)
  - OS PL/I Version 2 Release 3 Compiler and Library (5668-910)
  - OS PL/I Version 2 Release 3 Library Only (5668-911)
  - LE/370 Version 1 Release 2 or subsequent releases (5688-198)
- TSO/E Version 2 Release 1 through Release 4 (5685-025)
- OS/390 Version 1 Release 3 or subsequent releases (5645-001)
- SMP/E (TM) Release 8 (5668-949) or subsequent releases (required for installation only)

Chapter 2. Customizing DB2 Admin

This chapter contains diagnosis, modification, or tuning information. Do not use this information as a programming interface.

This chapter describes how to customize DB2 Admin. Information on the related tasks of installation and installation verification appears in the program directory.

The customization process tailors DB2 Admin to your installation's standards. Customization is recommended although not absolutely necessary. DB2 Admin runs as delivered using its defaults.

DB2 Admin provides SMP/E usermods, an ADB2CUST exec, and batch jobs to do customization.

Two **SMP/E usermods** are provided in the SADBSAMP target library:

- ADBU001, which is used to customize the main DB2 Admin menu panel and a panel showing a selection of DB2 systems if more than one is active
- ADBU002, which is used to customize JCL skeletons for running DB2 utilities invoked from DB2 Admin

You can receive and apply these usermods using the JCL in data set SADBIJCL member ADBUMOD. You need to modify this JCL to meet your installation's standards.

The **ADB2CUST exec** is an ISPF dialog for customizing DB2 subsystem parameters and DB2 Admin general parameters. ADB2CUST can be executed just after DB2 Admin installation or any time you want to change these parameters.

Batch jobs are provided in library SADBSAMP so that you can:

- Create your own copy of DB2 system catalog tables
- Create views so you can update RUNSTATS information for your own objects in the catalog
- Grant SELECT access on catalog tables

SMP/E Usermods

DB2 Admin is delivered with two SMP/E usermods. Customization is done with usermods so that the changes you make are retained if PTFs are later applied to the product.

Two usermods are provided in library SADBSAMP: ADBU001 and ADBU002. These usermods are used to customize DB2 Admin panels ADB2DB2X and ADB2 (in the SADBPLIB data set) and JCL skeletons (in the SADBSLIB data set). Member ADBUMOD in SADBIJCL provides the JCL necessary to run SMP/E steps RECEIVE and APPLY.

The items that can be customized using SMP/E usermods are:

- DB2 subsystems a user can access
- DB2 products (like QMF or DB2PM) that can be invoked from the DB2 Admin main menu
- JCL skeletons for running DB2 utilities

DB2 Subsystems a User Can Access

This part of customization doesn't apply to users with just one DB2 subsystem. In this case, DB2 Admin skips panel ADB2DB2X; the main DB2 Admin panel is the first panel the user sees after starting the DB2 Admin session.

Users with multiple DB2 systems can customize the source code for panel ADB2DB2X. Usermod ADBU001 in the SADBSAMP library contains a sample job to modify panel ADB2DB2X. The source code for panel ADB2DB2X is shown in Figure 1 on page 11.

The following variables are available in panel ADB2DB2X. Except for DB2ADB2N, you can modify these variables to suit your installation's requirements:

DB2ADB2N Number of active DB2 systems.

DB2ADB2S DB2 system names valid for the user. This variable is initialized to the DB2 systems that are active. It should be set to the DB2 systems that the user should see if more than one default system is active for the user.

DB2ADEFS Default systems for the user. This variable should be set to the default DB2 system the user should enter. If only one of these systems is active, it will be selected. Otherwise, the DB2 systems in DB2ADB2S are shown to the user.

This customization does not stop users from using the SYS(nnn) keyword on the ADB CLIST to access other DB2 subsystems. The panel is a productivity aid, not a security definition.

```
)attr
/* DATABASE 2 Administration Tool for OS/390.                       */
/* 5645-DB2 (C) Copyright IBM Corporation 1999.                      */
/* All rights reserved.  Licensed materials - property of IBM.       */
/* US Government Users Restricted Rights - Use, duplication or       */
/* disclosure restricted by GSA ADP schedule contract with IBM Corp. */
    type(text)   color(&ichco) hilite(&ichhi)           /*Headlines
  ? type(output) color(&ichco) hilite(&ichhi)           /*Headlines
  ; type(text)   color(&iccco) hilite(&icchi)           /*Command text
  ¬ type(text)   color(&icfco) hilite(&icfhi) attn(on)  /*Selection parameter
  | type(input)  color(&icico) hilite(&icihi)           /*Function/command input
  ¢ type(output) color(&iceco) hilite(&icehi) caps(off) /*Error messages etc.
  + type(text)   color(&icnco) hilite(&icnhi)           /*Normal text
  % type(text)   color(&icsco) hilite(&icshi)           /*Emphasized text
  _ type(input)  color(&icico) hilite(&icihi) caps(on)  /*Normal input field
  \ type(output) color(&icoco) hilite(&icohi) caps(off) /*Normal output field
)body cmd(zcmd) expand(!!) smsg(emsg) lmsg(emsg)
 &adb2name !-! &adb2name DB2 Subsystem Selection Exit Panel !-!
;Command ===>|zcmd                                ! !+
¢emsg
+
% This panel is only shown in DEBUG mode
+
+ DB2 systems: _db2adb2n
+ DB2 names  : _db2adb2s
+ User       : _user
)INIT
 IF (&DEBUG¬=DEBUG)
   .resp = ENTER
 &user=&zuser
 &DB2ADEFS = &DB2ADB2S
)PROC
 if (&DB2AINST=DKIBM)                    /* For installation DKIBM */
   &uu = Trunc(&user,2)                  /* uu=user prefix (2 char)*/
   &sf = .trail
   if (&uu=CC)                           /* CC user ? */
     &DB2ADB2S = 'DB2T DB2X DB2P DB2M DB2D DB2W'
     &DB2ADEFS = 'DB2T DB2X DB2P'
   if (&uu=IS)                           /* IS user ? */
     &DB2ADB2S = 'DB2T DB2X DB2P DB2M'
     &DB2ADEFS = 'DB2T DB2X DB2P'
   if (&user=ISTJE,ISTJE2,ISTJE3)        /* ISTJE ? */
     &DB2ADB2S = 'DB2T DB2X DB2P DB2M DB2D DB2W'
     &DB2ADEFS = 'DB2T DB2X DB2P DB2M DB2D DB2W'
   if (&uu=DK)                           /* DK user ? */
     &u3=trunc(&sf,3)
     if (&u3=BAL,NYK)                    /* DKBAL or DKNYK user ? */
       &DB2ADB2S = 'DB2D'
     else                                /* Normal DK user */
       &DB2ADB2S = 'DB2T DB2X DB2P DB2M'
       &DB2ADEFS = 'DB2T DB2X DB2P'
   if (&uu=DP)                           /* DP user ? */
     &u2=trunc(&sf,2)
     if (&u2=EC)                         /* DPEC user ? */
       &DB2ADB2S = 'DB2M'
     else                                /* Normal DP user */
       &DB2ADB2S = 'DB2M'
   if (&uu=DC)                           /* DC user ? */
     &DB2ADB2S = 'DB2M'
)END
```

Figure 1. Source Code for Panel ADB2DB2X

DB2 Products That Can Be Invoked From the Main Menu

The bottom part of the DB2 Administration Menu panel (see Figure 2) is intended for invocation of other DB2 products. You can add your installation's DB2 products (for example, QMF and DB2PM) either by modifying the main menu panel (as shown here) or by using the customization exec (see Figure 9 on page 21).

Usermod ADBU002 in the SADBSAMP library contains a sample job to modify panel ADB2. Part of the source code for panel ADB2 is shown in Figure 3 on page 13.

An example: To add a new DB2 product to the DB2 Administration Menu panel, modify the set of variables &B, &BOPT, &BDESCR, &BISPF, &BPAN, &BCMD, and &BNEWAT. An example of how this is done is shown in Figure 3 on page 13. The product DB2I has been added using the set of variables &A.

```
DB2 Admin -------------- DB2 Administration Menu 6.1.1 ------------------ 19:03
Option ===>

   1 - DB2 system catalog                                DB2 System: DB2X
   2 - Execute SQL statements                            DB2 SQL ID: ISXSTL
   3 - DB2 performance queries                           Userid    : ISXSTL
   4 - Change current SQL ID
   P - Change parameters for DB2 Admin                   DB2 Rel   : 610
  DD - Distributed DB2 systems
   E - Explain
   Z - DB2 system administration

Interface to other DB2 products and offerings:

   I - DB2I   DB2 Interactive
```

Figure 2. DB2 Administration Menu Panel (ADB2)

```
/* ---------------------------------------------------------------- */
/* START OF CUSTOMIZATION SECTION                                   */
/* Can be used to add local options to the menu                     */
/* ---------------------------------------------------------------- */
/* FUNCTION CHOICE CHARACTERS AS DISPLAYED ON THE PANEL             */
/* ---------------------------------------------------------------- */
&A = ' D'
&B = &Z
&C = &Z
&D = &Z
&E = &Z
&F = &Z
&G = &Z
&H = &Z
&I = &Z
&J = &Z
/* ---------------------------------------------------------------- */
/* FUNCTION CHOICE CHARACTERS BEING ENTERED (WITHOUT LEADING BLANKS) */
/* ---------------------------------------------------------------- */
&AOPT = D
&BOPT = &Z
&COPT = &Z
&DOPT = &Z
&EOPT = &Z
&FOPT = &Z
&GOPT = &Z
&HOPT = &Z
&IOPT = &Z
&JOPT = &Z
/* ---------------------------------------------------------------- */
/* FUNCTION CHOICE DESCRIPTIONS:                                    */
/* ---------------------------------------------------------------- */
&ADESCR = '- DB2I                        '
&BDESCR = &Z
&CDESCR = &Z
&DDESCR = &Z
&EDESCR = &Z
&FDESCR = &Z
&GDESCR = &Z
&HDESCR = &Z
&IDESCR = &Z
&JDESCR = &Z
/* ---------------------------------------------------------------- */
/* FUNCTION CHOICE ACTIONS: ISPF STATEMENTS                         */
/* ---------------------------------------------------------------- */
&AISPF  = 'SELECT PANEL(ADB2DB2I) NEWAPPL(DSNE) OPT(&DB2SYS) PASSLIB'
&BISPF  = &Z
&CISPF  = &Z
&DISPF  = &Z
&EISPF  = &Z
&FISPF  = &Z
&GISPF  = &Z
&HISPF  = &Z
&IISPF  = &Z
&JISPF  = &Z
/* ---------------------------------------------------------------- */
/* FUNCTION CHOICE ACTIONS: PANELS                                  */
/* ---------------------------------------------------------------- */
&APAN   = &Z
&BPAN   = &Z
&CPAN   = &Z
&DPAN   = &Z
&EPAN   = &Z
&FPAN   = &Z
&GPAN   = &Z
&HPAN   = &Z
&IPAN   = &Z
&JPAN   = &Z
```

Figure 3 (Part 1 of 2). Source Code for Panel ADB2

```
/* ---------------------------------------------------------------- */
/* FUNCTION CHOICE ACTIONS: DB2 ADMIN COMMANDS                      */
/* ---------------------------------------------------------------- */
&ACMD   = &Z
&BCMD   = &Z
&CCMD   = &Z
&DCMD   = &Z
&ECMD   = &Z
&FCMD   = &Z
&GCMD   = &Z
&HCMD   = &Z
&ICMD   = &Z
&JCMD   = &Z
/* ---------------------------------------------------------------- */
/* FUNCTION CHOICE ACTIONS: NEW DB2 ATTACH ?                        */
/* ---------------------------------------------------------------- */
&ANEWAT = YES
&BNEWAT = &Z
&CNEWAT = &Z
&DNEWAT = &Z
&ENEWAT = &Z
&FNEWAT = &Z
&GNEWAT = &Z
&HNEWAT = &Z
&INEWAT = &Z
&JNEWAT = &Z
/* ---------------------------------------------------------------- */
/* END OF CUSTOMIZATION SECTION                                     */
/* ---------------------------------------------------------------- */
```

Figure 3 (Part 2 of 2). Source Code for Panel ADB2

JCL Skeletons for Running DB2 Utilities

You can customize the JCL used by DB2 Admin to run DB2 utilities by modifying the skeletons in usermod ADBU002 in library SADBSAMP. When you subsequently execute ADBUMOD to receive and apply usermod ADBU002, the resulting JCL will be in the following twelve members of the SADBSLIB library:

ADB2USAG Define GDG for COPY data sets
ADB2USC1 COPY TABLESPACE
ADB2USE1 MERGECOPY TABLESPACE
ADB2USK CHECK utility
ADB2USO1 REORG TABLESPACE utility
ADB2USV RECOVER utility
ADB2USVG Find the last copy of GDG
ADB2UTL LOAD TABLES
ADB2UTU UNLOAD TABLES
ADB2UXK CHECK INDEX utility
ADB2UXO1 REORG INDEX utility
ADB2UXV RECOVER INDEXES utility

All lines that may need tailoring are preceded by)CM (comment) lines explaining what you may need to change.

DB2 Admin is using the DB2 sample unload program DSNTIAUL for table unload. The plan name for DSNTIAUL can also be customized using this usermod.

ADB2CUST Exec

You access the customization dialog by executing the ADB2CUST exec, which takes you through an ISPF dialog. The dialog stores the result of this customization step in two ISPF tables. DB2 Admin accesses these tables at run time. The values used at run time are assigned in the following order until a value is found:

1. Keyword parameters specified to the ADB CLIST at run time
2. DB2 subsystem-specific customization parameters
3. DB2 Admin general customization parameters
4. DB2 Admin default parameters

What You Can Customize

The items that can be customized using the dialog are shown in Figure 4. A description of each item follows the table.

The numbers in the Source of Specification column in the table refer to the list above.

Figure 4. Items You Can Customize From the Customization Dialog

Customizable Items	Source of Specification	Default
DB2 subsystem description text	2, 4	null
DB2 catalog copy qualifier	1, 2, 3, 4	null
DB2 security exit type	1, 2, 3, 4	STD
System identification method	1, 3, 4	null
Job parameter SYSAFF on batch DB2 utility jobs	1, 2, 4	null
Job class on batch DB2 utility jobs	2, 4	A
Unit name of TSO work data sets	1, 3, 4	ISPF V4 unit name (ZCUNIT) or VIO
Unit name of batch work data sets	1, 3, 4	ISPF V4 unit name (ZCUNIT) or SYSDA
Installation name	1, 2, 3, 4	null

DB2 Subsystem Description Text

There should be one text description for each DB2 subsystem. The text descriptions are displayed when a user by default (as determined from the specifications made on panel ADB2DB2X) has access to multiple active DB2 subsystems.

DB2 Catalog Copy Qualifier

DB2 Admin is able to run on a copy of the DB2 catalog. The DB2 catalog copy qualifier is the authorization ID of the owner of the copy of the DB2 catalog tables. A qualifier can be specified generally, or it can be specified for each DB2 subsystem. If a qualifier is specified, an input field appears on the menus in DB2 Admin where the user can specify whether to run on the active catalog or the copy of the catalog.

If a qualifier is specified, you should create a copy of the catalog (as described later in this chapter).

DB2 Security Exit Type

DB2 Admin option 4 (see Figure 45 on page 59) displays a list of alternate SQL IDs that a user can use. To create this list, DB2 Admin invokes or simulates the DB2 connection exit (DSN3@ATH). To do this, DB2 Admin needs to know what type of exit is installed. Possible values are:

STD	Standard DB2 security exit (this is the default)
SAMPLE	Sample DB2 security exit (logic being simulated)
AUTH	Your installation's DB2 security exit, which needs to run authorized
OWN	Your installation's DB2 security exit, which can run unauthorized
NOCALL	Do not call the security exit

This value can be specified generally, or it can be specified for each DB2 sub-system.

If you specify NOCALL, DB2 Admin cannot show the SQL IDs a user can use in option 4 on the DB2 Administration Menu panel.

If you specify AUTH, DB2 Admin calls your DB2 connection exit from an authorized program in supervisor state, key 7. In this case, you need to do the following:

1. Copy authorized program ADB2ATH from ADB.V610.SADBLINK to an APF authorized library in the linklist in your system.
2. Let the TSO service facility invoke ADB2ATH authorized. To do this, modify SYS1.PARMLIB(IKJTSOxx) and add program ADB2ATH as shown in Figure 5.

```
AUTHPGM NAMES(              /* AUTHORIZED PROGRAMS */      +
   ........                                                +
   ADB2ATH                  /* CALLS DSN3@ATH      */      +
   ........)                /*                     */      +
AUTHTSF NAMES(   /* PROGRAMS TO BE AUTHORIZED      */      +
                 /* WHEN CALLED THROUGH THE TSO    */      +
                 /* SERVICE FACILITY.              */      +
   ........                 /*                     */      +
   ADB2ATH                  /* CALLS DSN3@ATH      */      +
   ........)                /*                     */
```

Figure 5. Adding Program ADB2ATH

3. Activate the changes immediately or at the next IPL, using the following TSO/E command: PARMLIB UPDATE(xx)

System Identification Method

If job parameter SYSAFF is needed for batch utility jobs, you must tell DB2 Admin which method to use to determine the system ID (there is no programming interface to get the system ID in MVS). You can use one of the following keywords to specify which method DB2 Admin is to use:

JESID Use the JES2 name (only valid on JES2 systems).
SMFID Use the SMF ID (only valid if SMF is active).
SYSNAME Use the first 4 bytes of the MVS system name in the CVT.
NONE Do not find the system ID.
name Use this name for the SYSAFF name on the job parameter.
null This is the same as the JESID.

Job Parameter SYSAFF on Batch DB2 Utility Jobs

Job parameter SYSAFF may be necessary to ensure batch DB2 utility jobs are executed on the same MVS system as the DB2 subsystem. You can specify SYSAFF's requirements using one of the following values. SYSAFF can be specified generally, or it can be specified for each subsystem.

NONE Do not generate a SYSAFF parameter on the JOB statement for utilities.
name Use this name for the SYSAFF name on the job parameter.
null Use the name found by using the system identification method above. This is the default.

The value NONE can be used if your location has a dedicated job class for batch DB2 utility jobs. The resulting value is stored in variable &DB2AJSYS, which may be blank.

Job Class On Batch DB2 Utility Jobs

The default is A. This value is stored in the &DB2AJCLS variable. This value can be specified generally, or it can be specified for each DB2 subsystem.

Unit Name of TSO Work Data Sets

The default is VIO. This value is stored in the &DB2AVIO variable. This value can only be specified generally.

Unit Name of Batch Work Data Sets

The default is SYSDA. This value is stored in the &DB2ADASD variable. This value can only be specified generally.

Installation Name

This parameter is fetched and stored for your installation's use in modified or new DB2 Admin panels. The default is null. The value is stored in the &DB2AINST variable. This value can be specified generally, or it can be specified for each DB2 subsystem.

Invoking the Dialog

You invoke the ADB2CUST exec in ISPF option 6 (TSO) with this command:

```
EXEC 'ADB.V610.SADBEXEC(ADB2CUST)'
```

Supplying Information On the Customization Panels

This section describes the panels where you supply the customization information described in the previous section.

DB2 Admin Customization Panel

This panel (Figure 6) appears when you invoke the ADB2CUST exec.

You need to tell DB2 Admin the name of the ISPF table library to use when DB2 Admin is started, so tables are stored in the correct library. Specify the SADBTLIB library on this panel, and use this panel to select additional customization steps.

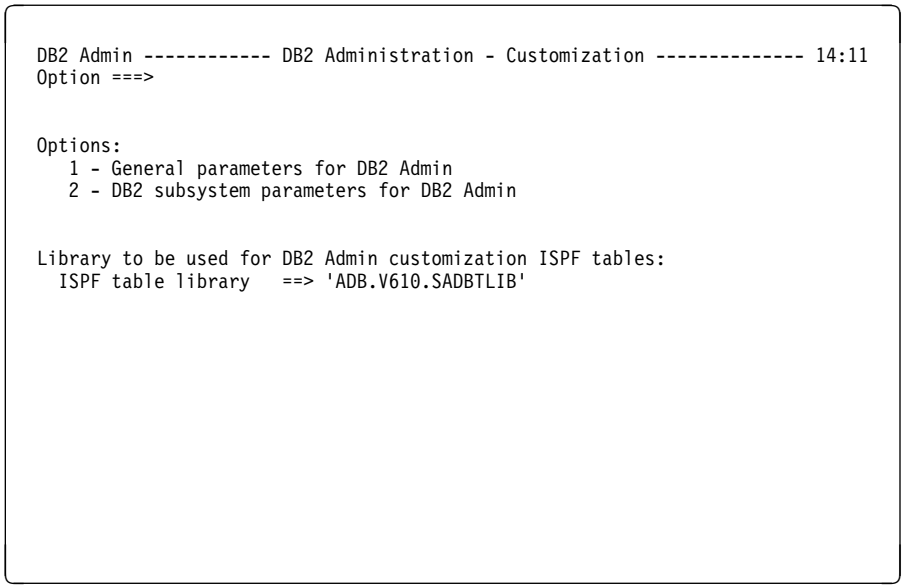

Figure 6. DB2 Admin Customization Panel (ADB2CUS0)

General Customization Parameters Panel

If you select option 1 on the DB2 Admin Customization panel, this panel (Figure 7) appears.

Use this panel to specify DB2 Admin general customization parameters. The information you can specify on this panel is described in “What You Can Customize” on page 15.

The general customization parameters are stored in ISPF table member ADB2PARM in the ISPF table library specified on the DB2 Admin Customization panel.

```
DB2 Admin ------------- Customization - General Parameters ------------- 14:12
Option ===>


General parameters for DB2 Admin:
  DB2 security exit type            ==> STD       (STD,SAMPLE,AUTH,NOCALL,OWN)
  Catalog copy qualifier            ==>           (owner name)
  System identification method      ==>           (JESID,SMFID,SYSNAME or NONE)
  Unit name for TSO work data sets  ==> VIO
  Unit name for batch data sets     ==> SYSDA
  Installation name                 ==>

Current SYSAFF information for this MVS system:
  JES ID:          MVSB  (found via JESID method)
  SMF ID:          MVSB  (found via SMFID method)
  MVS system name: MVSB  (found via SYSNAME method)


  Press ENTER to save parameters, or END to leave without saving parameters.
```

Figure 7. General Customization Parameters Panel (ADB2CUS1)

DB2 Subsystem Customization Parameters Panel

If you select option 2 on the DB2 Admin Customization panel, this panel (Figure 8) appears.

Use this panel to specify DB2 subsystem parameters. The information you can specify on this panel is described in “What You Can Customize” on page 15.

```
DB2 Admin --------- Customization - DB2 Subsystem Parameters ----------- 14:12
Option ===>


Options:
   1 - Merge list of active DB2 subsystem(s) into ISPF table
   2 - Edit ISPF table

Currently active DB2 subsystem(s) on this MVS system:
  DB2 subsystem(s):    DB2M DB2T DB2X DB2W
Data sets to be used for DB2 Admin customization:
  ISPF table library:  'ADB.V610.SADBTLIB'
```

Figure 8. DB2 Subsystem Customization Parameters Panel (ADB2CUS2)

Each DB2 subsystem can have one ISPF table row containing a text description and default values for that DB2 subsystem. This specification overrides the general customization parameters set for DB2 Admin.

Option 1 adds to the ISPF table one row with null values for each of the currently active DB2 subsystems. DB2 subsystems that have already been added are not replaced. This allows repeated use of option 1 without losing information about DB2 subsystems that have already been described.

Option 2 unloads the ISPF table to a sequential data set, and lets you edit the sequential data set using ISPF edit. If modified during editing, the sequential data set is reloaded into the ISPF table. The ISPF table is completely replaced with the edited data. This option can also be used to delete old data for inactive DB2 subsystems.

The following panel (Figure 9 on page 21) is an example of the panel that appears when you choose option 2.

```
 EDIT ---- SYS95138.T141236.RA000.ISTJE.R0000050 -------------- COLUMNS 001 072
 COMMAND ===>                                                  SCROLL ===> HALF
0000002 *
0000003 * Tags recognized by ADB2CUST exec:
0000004 * --------------------------------
0000005 *  :nick.     Name of DB2 subsystem being described.
0000006 *  :desc.     Text to be displayed for this DB2 subsystem.
0000007 *  :secexit.  DB2 security exit type (STD, SAMPLE, AUTH, OWN, NOCALL).
0000008 *  :catown.   Catalog copy qualifier.
0000009 *  :jclass.   Job class to be used for batch DB2 utility jobs.
0000010 *  :jsysaff.  SYSAFF to be used for batch DB2 utility jobs.
0000011 *  :instparm. Installation name.
0000012 *  :utilpre.  Utility data set prefix.
0000013 *
0000014 *  :bl2llib.  DB2 load library
0000015 *  :bl2rlib.  DB2 run library
0000016 *  :bl2mlib.  DB2 message library
0000017 *  :bl2plib.  DB2 panel library
0000018 *  :bl2slib.  DB2 skeleton library
0000019 *  :bl2tlib.  DB2 table library
0000020 *  :bl2elib.  DB2 rexx exec library
0000021 *  :bl2clib.  DB2 clist library
0000022 *
0000023 *  Main menu option tags (prefixed by letter a-j)
0000024 *
0000025 *  :aopt.     Option
0000026 *  :adescr.   Option description
0000027 *  :aispf.    ISPF statement for option
0000028 *  :apan.     Panel for option
0000029 *  :asql.     SQL statement for option
0000030 *  :acmd.     DB2 admin command for option
0000031 *  :anewat.   New DB2 attachment (YES/NO)
0000032 *
0000033
0000034 :nick.DB2P     :desc.Production DB2 system
0000035                :jclass.P
0000036                :catown.SYSIBMC
0000037
0000038 :nick.DB2T     :desc.Test DB2 system
0000039                :jclass.T
0000040
0000041 :nick.DB2W     :desc.New release DB2 system
0000042                :colon.jclass.W
******* **************************** BOTTOM OF DATA ****************************
```

Figure 9. Example of Using ISPF Edit to Specify DB2 Subsystem Parameters

The sequential data set uses free-form tags and values, which may be written on one or more lines for each DB2 subsystem. A tag is a column name with a value and is written as:

:name.value

A tag name begins with a colon and is followed by a period and a tag value. The tag value can have any length and any content, but it cannot contain a colon. Tag names recognized by DB2 Admin are:

:nick. Name of the DB2 subsystem being described.
:desc. Text to be displayed for this DB2 subsystem.
:secexit. DB2 security exit type.
:catown. Catalog copy qualifier.
:jclass. Job class to be used for batch DB2 utility jobs.
:jsysaff. SYSAFF job parameter to be used for batch DB2 utility jobs.
:instparm. Installation name.

:utilpre. High Level Qualifier (HLQ) or prefix of the data sets used in DB2 utility jobs. The resulting value is stored in variable &DB2AUPRE. Special values are:

USERID	TSO userid. This is the default value.
OWNER	The owner of the object.
CREATEDBY	The creator of the object.
name	Any HLQ.

DB2 release-specific library tags are as follows:

:bl2llib. DB2 load library. An example follows:

```
:bl2llib.'SYS1.SDSNEXIT' 'SYS1.SDSNLOAD'
```

The default is no value. If nothing is specified, DB2 Admin uses the standard MVS search for DB2 modules. The value is stored in variable &DB2ALOAD.

When generating utility jobs that use the DB2-supplied JCL producedure DSNUPROC, DB2 Admin sets the symbolic parameter LIB to the second library specified in this tag.

:bl2rlib. Run library for DB2 sample program DSNTIAUL. An example follows:

```
:bl2rlib.'SYS1.DSN.RUNLIB.LOAD'
```

The default is no value. If nothing is specified, DB2 Admin uses the library specified in the ISPF skeleton (member ADB2UTU in SADBSLIB). The value is stored in variable &DB2ARLIB.

:bl2mlib. Message library.
:bl2plib. Panel library.
:bl2slib. Skeleton library.
:bl2tlib. Table library.
:bl2elib. Rexx exec library.
:bl2clib. Clist library.

The DB2 release-specific tags let you use DB2 Admin on different versions of DB2 using the same TSO logon procedure in the same LPAR. The tags are needed when a DB2 subsystem needs libraries different from the ones in the TSO logon procedure and link list.

The main menu option tags let you customize the main menu without having to modify the panel (ADB2). The tags are prefixed with a letter, from `a` to `j`, which indicates the position of the tag on the main menu (`a` is the first option on the menu). The tags are:

:aopt. First option that will be displayed on the main menu.
:adescr. Description of the option.
:aispf. The ISPF statement that DB2 Admin should execute for this option.
:apan. The panel that DB2 Admin should display for this option.
:asql. The SQL statement that DB2 Admin should execute for this option.
:acmd. The DB2 Admin command for this option.
:anewat. Whether this option will start a new DB2 attachment (YES/NO).
:bopt. Second option that will be displayed on the main menu.
:b... The parameters for the second option on the main menu.

The DB2 subsystem parameters are stored in ISPF table member ADB2DB2D in the table library specified on the DB2 Customization panel (see Figure 6 on page 18).

Batch Jobs

Sample library SADBSAMP contains jobs for optional customization of the DB2 subsystems on which DB2 Admin is installed. These jobs do the following:

- Establish a copy of the catalog tables
- Define views to be used for updating RUNSTATS statistics
- Grant SELECT access on the catalog tables
- Create new indexes on the catalog tables (DB2 V4 only).

Establishing A Copy of the Catalog Tables

If you want to run DB2 Admin on copies of the DB2 catalog tables, you need to do the following:

1. Create a copy of the catalog tables.

   Member ADBCCD in SADBSAMP contains a sample job to create the tables. The only difference that is allowed between the catalog tables and the copy of them is that the owner of the tables can be different. The table names must be the same. The owner (qualifier) of the tables must match the catalog copy qualifier specified in the customization dialog.

   This job also executes GRANTs to the copy of the catalog tables.

2. Unload the catalog.

   Member ADBCCU in SADBSAMP contains a sample job that unloads the DB2 system catalog.

3. Load the unloaded rows into the copy of the catalog tables.

   Member ADBCCL in SADBSAMP contains a sample job that loads the copy of the catalog tables.

4. Run the RUNSTATS utility on the catalog copy table space and indexes.

   Member ADBCCST in SADBSAMP contains a sample job for running RUNSTATS.

You should run these jobs on a regular basis to refresh the content of the copy of the catalog tables.

Defining Views to Update RUNSTATS Statistics

Run job ADBRUNSV in SADBSAMP to create views that allow the creators to update the RUNSTATS information of their own objects in the catalog.

Granting Access to the DB2 Catalog

DB2 Admin uses dynamic SQL against the catalog. If you plan to make DB2 Admin available to a large number of users, you may want to grant SELECT on the catalog to PUBLIC AT ALL LOCATIONS, or specify which IDs are authorized to see the catalog.

A sample job for doing this is in SADBSAMP(ADBGC).

Creating New Indexes on the Catalog Tables

You may want to create additional indexes on the DB2 catalog tables to improve performance when DB2 Admin accesses catalog tables that have no index. The DB2 catalog tables are as follows:

- SYSIBM.SYSDBRM
- SYSIBM.SYSSTMT
- SYSIBM.SYSFIELDS
- SYSIBM.SYSFOREIGNKEYS
- SYSIBM.SYSRELS

A sample job to create indexes on these tables is in SADBSAMP(ADBCX).

Chapter 3. Before Using DB2 Admin

This chapter describes:

- Using the table display panels
- Using the BROWSE panels
- Using the SQL error display panels
- Finding the source code for panels
- Navigating DB2 Admin tutorial panels
- Using DB2 Admin primary and line commands
- Invoking DB2 Admin

Using Table Display Panels

DB2 Admin panels are self-explanatory for the most part. However, it is useful to look at the layout and uses of the table display panel. It is from this panel that much of the DB2 Admin function is initiated.

Figure 10 shows the areas on a typical table display panel.

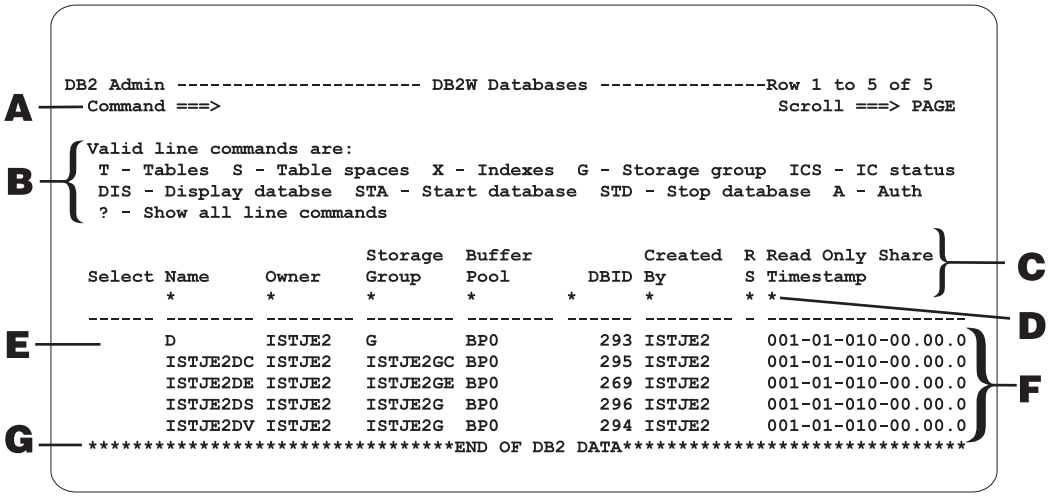

Figure 10. Layout of the Table Display Panel

A description of the areas follows.

A **Command Line.** On this line, you can enter any DB2 command, ISPF command, or DB2 Admin primary command. DB2 Admin primary commands are described in “Primary Commands” on page 31 later in this chapter.

B **Line Command Description Area.** These are the DB2 Admin line commands that can be issued from this table display panel. You issue a line command from the "Select" field (area E).

When there is not enough room on a panel to list all valid line commands, the most frequently used ones are listed. All other valid line commands are accessed by putting a question mark (?) in the "Select" field.

C **Column Headers.** These are the names of the columns that are returned by DB2.

D **Search Arguments.** The asterisk (*) under the column name marks the beginning of an area in which you can enter search criteria to limit the information DB2 Admin shows to you. You could, for example, enter D050 in the "Name" column; DB2 would display only those databases whose name begins with D050.

E **Line Command Area.** This is where you enter the DB2 Admin line commands shown in area B. The line commands are described in “Line Commands” on page 32 later in this chapter.

F **Rows Returned.** In this area, DB2 returns rows to you based on the options you selected, the commands you issued, or your search criteria. To get this panel, you request (on a system catalog menu panel) that all databases owned by ISTJE2 be displayed.

G **End of Data Marker.** This marker indicates the end of the data returned from DB2.

Using Browse Panels

You can issue the DB2 Admin BROWSE primary command from any table display panel.

Figure 11 shows a table display panel of tables owned by the DB2 catalog. The BROWSE command is issued.

```
DB2 Admin ----------- DB2W Tables, Views, and Aliases ----  ROW 1 TO 13 OF 261
Command ===> BROWSE                                          Scroll ===> PAGE

Valid line commands are:
 C - Columns  A - Auth  L - List  X - Indexes  S - Table space  D - Database
 V - Views  T - Tables  P - Plans  Y - Synonyms  SEL - Select prototyping
 ? - Show all line commands

Sel   Name               Owner    T DB Name  TS Name    Cols        Rows Checks
      *                  *        * *        *        *      *           *
----- ------------------ -------- - -------- -------- ------ ----------- ------
      ADDRESS            CBE      A DSNDB06  SYSDBAUT      0          -1      0
      ALIAS              CBE      A DSNDB06  SYSDBAUT      0          -1      0
      BUSINESS_PARTNER   CBE      A DSNDB06  SYSDBAUT      0          -1      0
      CATEGORY           CBE      A DSNDB06  SYSDBAUT      0          -1      0
      CAU                CBE      A DSNDB06  SYSDBAUT      0          -1      0
      CM_HOST_DEFINITION CBE      A DSNDB06  SYSDBAUT      0          -1      0
      CM_LOGICAL_UNIT    CBE      A DSNDB06  SYSDBAUT      0          -1      0
      HARDWARE           CBE      A DSNDB06  SYSDBAUT      0          -1      0
      HARDWARE_TYPE      CBE      A DSNDB06  SYSDBAUT      0          -1      0
      ID                 CBE      A DSNDB06  SYSDBAUT      0          -1      0
      LAN_ALIAS_ACCESS   CBE      A DSNDB06  SYSDBAUT      0          -1      0
```

Figure 11. Issuing the DB2 Admin BROWSE Primary Command

Figure 12 shows output from the BROWSE command. Output is in ISPF browse format. The first line is a header with the DB2 column names. You can see the rest of the columns by scrolling to the right.

```
DB2 Admin ----- DB2W Browse Result of SQL Select ---- Line 00000000 Col 001 080
Command ===>                                                  Scroll ===> PAGE

******************************** TOP OF DATA  ********************************
NAME                CREATOR  TYPE DBNAME   TSNAME   DBID   OBID   COLCOUNT EDPRO
------------------- -------- ---- -------- -------- ------ ------ -------- -----
ADDRESS             CBE      A    DSNDB06  SYSDBAUT      0      0        0
ALIAS               CBE      A    DSNDB06  SYSDBAUT      0      0        0
BUSINESS_PARTNER    CBE      A    DSNDB06  SYSDBAUT      0      0        0
CATEGORY            CBE      A    DSNDB06  SYSDBAUT      0      0        0
CAU                 CBE      A    DSNDB06  SYSDBAUT      0      0        0
CM_HOST_DEFINITION  CBE      A    DSNDB06  SYSDBAUT      0      0        0
CM_LOGICAL_UNIT     CBE      A    DSNDB06  SYSDBAUT      0      0        0
HARDWARE            CBE      A    DSNDB06  SYSDBAUT      0      0        0
HARDWARE_TYPE       CBE      A    DSNDB06  SYSDBAUT      0      0        0
ID                  CBE      A    DSNDB06  SYSDBAUT      0      0        0
LAN_ALIAS_ACCESS    CBE      A    DSNDB06  SYSDBAUT      0      0        0
LAN_USER_ACCESS     CBE      A    DSNDB06  SYSDBAUT      0      0        0
LAN_USER_STRUCTURE  CBE      A    DSNDB06  SYSDBAUT      0      0        0
LOCATION            CBE      A    DSNDB06  SYSDBAUT      0      0        0
ORG_PERSON_ROLE     CBE      A    DSNDB06  SYSDBAUT      0      0        0
ORG_ROLE            CBE      A    DSNDB06  SYSDBAUT      0      0        0
```

Figure 12. Output From the BROWSE Command

Note that DB2 Admin can also display data in tables that contain BLOB, CLOB, DBCLOB, and ROWID columns. For BLOBs, DB2 Admin retrieves up to 128 bytes per column and displays the data in hex. For CLOBs, DB2 Admin retrieves up to 256 bytes per column. For DBCLOBs, DB2 Admin retrieves up to 128 bytes per column. ROWIDs are also displayed in hex.

Using SQL Error Display Panels

If an error occurs during execution of an SQL statement, DB2 Admin displays the SQL code and error message on a separate panel. You can correct the SQL statement by pressing END, which brings you back to the panel where you originally issued the SQL statement. DB2 Admin puts the cursor at the position in the SQL statement where DB2 found the error.

Figure 13 shows the error panel DB2 Admin returns when the following SQL statement (containing a spelling error) is issued: `SELECT * FRON Q.STAFF`.

```
DB2 Admin ---------------------- DB2 Error Display 1 ---------------------- 14:14
Command ===>
Rollback done
   SQLCODE : -104                            DSNTIAR CODE :  0

DSNT408I SQLCODE = -104, ERROR:  ILLEGAL SYMBOL FRON VALID SYMBOLS ARE FROM
         INTO
DSNT418I SQLSTATE   = 37501 SQLSTATE RETURN CODE
DSNT415I SQLERRP    = DSNHPARS SQL PROCEDURE DETECTING ERROR
DSNT416I SQLERRD    = 0  0  0  -1  10  0 SQL DIAGNOSTIC INFORMATION
DSNT416I SQLERRD    = X'00000000'  X'00000000'  X'00000000'  X'FFFFFFFF'
         X'0000000A'  X'00000000' SQL DIAGNOSTIC INFORMATION
```

Figure 13. Error Display Panel (Part 1 of 2)

Press ENTER to see error panel two:

```
DB2 Admin ---------------------- DB2 Error Display 2 ---------------------- 14:14
Command ===>

   SQLCODE : -104                            DSNTIAR CODE :  0

PREPARE

SELECT * FRON Q.STAFF
```

Figure 14. Error Display Panel (Part 2 of 2)

Finding the Source Code for Panels

In the chapters describing the DB2 Admin panels, you'll notice that the name of the panel in the figure caption is followed by another name in parenthesis. In Figure 45 on page 59, for example, the figure caption is "DB2 Administration Menu Panel (ADB2)." The name in parenthesis (ADB2) is the source code panel name.

If you are developing DB2 Admin applications, you can use this name to quickly bridge to the source code for a specific panel.

You can request that ISPF display the name of the panel in the upper left corner of the panel using the ISPF command PANELID ON.

Navigating the Tutorial Panels

You can enter the following commands in either the command or option field of DB2 Admin tutorial panels:

BACK or B Display the previous panel.

SKIP or S Skip the current topic and go to the next topic.

UP or U Display a higher level list of topics.

You can use the following keyboard keys whenever you are in the tutorial:

ENTER Display the next panel.

HELP Display the help information for this panel.

END End the tutorial.

UP Display a higher level list of topics.

DOWN Skip the current topic and go to the next topic (instead of typing SKIP).

RIGHT Display the next panel (instead of pressing ENTER).

LEFT Display the previous panel (instead of typing BACK).

Using DB2 Admin Commands

There are two types of DB2 Admin commands:

- Primary commands
- Line commands

Primary Commands

Primary commands can be issued from the command line on any DB2 Admin panel. There are 14 primary commands, as shown in Figure 15

For information on the syntax of the primary commands, see the help panels.

Figure 15 (Page 1 of 2). DB2 Admin Primary Commands

BROWSE	Use this command to browse the current ISPF table.
DB2 db2 command	Use this command to issue a DB2 command (for example, `DB2 -DIS THREAD (*)`) DB2 may be omitted from the command.
ISPF ispf statement	Use this command to issue one or more ISPF statements (for example, `ISPF SELECT CMD(MYCMD)`). A semicolon (;) should separate ISPF statements.
PANEL panel name	Use this command to display the panel whose name is specified.
PARMS	Use this command to show or to update current DB2 Admin parameters.
PRINT TABLE ON FILE ddname	Use this command to print the current table to the specified file. If you don't specify a file name, the default file with the DD name PRINT is used. The file must be preallocated with a disposition of OLD.
REFRESH	Use this command to refresh the current ISPF table with data from DB2.
SAVE TABLE AS name IN LIB ddname	Use this command to save the current ISPF table with the specified name in the specified library. If you don't specify a library name, the default library ISPTABL is used. The DD name must be preallocated to a data set before you use this command.
SHOW LIBRARY ddname ON PANEL name	Use this command to show a member list of the specified library on the specified panel. If you don't specify a library name, the default library ISPTABL is used. If you don't specify a panel name, the default panel DB2ADL is used. The DD name must be preallocated to a data set before you use this command.

Figure 15 (Page 2 of 2). DB2 Admin Primary Commands	
SHOW TABLE name ON PANEL name	Use this command to show the specified table. If you don't specify a panel name, the default panel ADB2DF is used.
SORT column names	Use this command to sort a column in the current ISPF table. You can place the cursor on the column you want sorted.
SQL sql statement	Use this command to issue one or more SQL statements (for example, `SQL SELECT * FROM MYTABLE`). A semicolon (;) should separate SQL statements. If an SQL statement returns rows, the default table display panel shows the rows. A plus sign (+) can be used instead of `SQL`.
SQLID id	Use this command to show or change the current SQLID (for example, `SQLID ISTJE`).
STATUS	Use this command to show the current status of DB2 Admin.

Line Commands

Line commands are issued from ISPF table display panels. Line commands specify an operation that is to be performed on the information that is displayed. Specify line commands in the line command area in front of each row (called the SELECT field).

There are two types of line commands:

- Special line commands
- General line commands

Special Line Commands

Special line commands appear in the line command description area (see Figure 10 on page 26)

Only the line commands included on a panel are valid for that panel. A question mark (?) line command appears on panels when there is not enough room to show all line commands. In this case, the panel shows the most frequently used line commands. If you enter '?', you get a list of all valid line commands for that panel.

Figure 16 shows the special line commands.

Figure 16 (Page 1 of 5). DB2 Admin Special Line Commands	
A	Display information about authorizations for this object.
ADD	Add constraint.
AL	Alter an object.
ALIAS	Show aliases.
B	Bind the object.
BC	Bind the copy of the object.

Figure 16 (Page 2 of 5). DB2 Admin Special Line Commands

BR	Browse the object.
C	Show the columns for this object.
CAN	Cancel the thread.
CC	Show columns referenced in constraint
CDI	Show column distribution.
CH	Show information about the referential integrity defined for child tables.
CHK	Show information about table check constraints.
CHR	Show information about the referential integrity defined for child relations.
COM	Comment on the object.
CRE	Create an object.
CREAL	Create an alias for the object.
CRESYN	Create a synonym for the table.
CRET	Create a table.
CREX	Create an index on the table
D	Show the database for the object. For the System Administration panels, D means delete the row.
DC	Describe the columns.
DEP	Show the dependencies on an object.
DI	Display distribution statistics.
DIS	Display information about the status of the object.
DISA	Display information about the allocated page sets.
DISL	Display information about locks for this object.
DISR	Display information about restrictions on use for this object.
DIST	Display information about threads for this object.
DISU	Display information about correlation or connection IDs for this object.
DK	Delete the rows for the package.
DP	Delete the rows for the plan.
DQ	Delete the rows for the query number.
DROP	Drop the object/constraint.
DROPSYN	Drop the synonym for the table.
E	Normally, E means show related data types. On some panels, E means edit the member (which is indicated on the panel).

Figure 16 (Page 3 of 5). DB2 Admin Special Line Commands

EN, ENDI	Show the connections that are either enabled or disabled for the object.
F	Free the object (BIND and REBIND panels). On all other panels, show related functions.
FC	Show the From Column.
FK	Show information about the referential integrity defined for foreign keys.
FR	Show explain function table rows.
G	Show the storage groups for the object.
GR	Grant privileges for the object.
H	Show the homonyms for the object.
I	Show detailed information about the object. For the System Administration panels, I can also mean insert the row.
ICS	Show the status of image copies for this object.
IH	Insert optimizer hint.
ILOC	Insert location.
ILUM	Insert LU modes.
IMODE	Insert mode.
IUSER	Insert authorization ID for a user.
J	Show triggers.
K	Show the packages for the object.
L	Show the collection for the object. For the tables panels, L means show the rows in the table. For the System Administration panels, L means list the catalog.
LAB	Label the object.
LOC	Show the location.
LP	List the PLAN_TABLE table for the object.
LU	Show the LU name.
LUM	Show the LU modes.
M	Show the DBRMs for the object.
MODE	Show the SYSMODESELECT rows for the location.
O	Show related stored procedures.
P	Show the plans for the object.
PA	Show information about the referential integrity defined for parent tables.
PAR	Show information about the referential integrity defined for parent relations.

Figure 16 (Page 4 of 5). DB2 Admin Special Line Commands

PARM	Show the parameter list
PK	Show the primary key for this table.
PL	Show the package lists for the object.
PST	Show partition statistics.
R	Revoke the privilege for the object.
RB	Rebind the object.
REM	Comment on the object.
S	Show the table spaces for the object. For the SQL Statements panels, S means show the column in the result. For the System Administration panels, S means display or update the table you selected. For the ADB2DDF and ADB2ZD2 panels, S means select the location.
SA	Show in ascending order.
SD	Show in descending order.
SEL	Build SQL SELECT statement for this object.
SP	Show the table space's parts.
SQ, SQL	Show the SQL statements.
SR	Show explain statement table rows.
STA	Start the object.
STAFO	Force a start of the object.
STARO	Start the object for a read operation.
STARW	Start the object for a read/write operation.
STAUT	Start the object so a DB2 utility can access it (no SQL statements can be issued against the object).
STO	Stop the object.
STOQ	Stop the stored procedure and queue requests.
STOR	Stop the stored procedure and reject requests.
T	Show the tables.
TC	Show the To Column.
TERM	Terminate the utility.
U	Update the row.
UR	Update the information provided by the RUNSTATS utility.
USER	Show the user names.
UT, UTL, UTIL	Run a DB2 utility job against the object.
V	Show the views on the object.

Figure 16 (Page 5 of 5). DB2 Admin Special Line Commands	
VE	Show the versions.
VOL	Show the volumes.
VS	Show how the view was created.
X	Show the indexes for the object.
XP	Show the parts of the index.
Y	Show the synonyms for the object.

General Line Commands

There are two general line commands: equal ('=') and slash ('/').

Equal ('=') Line Command: Use the '=' line command to repeat the last line command that you issued.

Figure 17 shows use of the '=' line command. The DIS command has been entered requesting a display of the database. The asterisk appears in the SELECT field in place of the DIS line command when DB2 Admin returns from executing the line command. When you enter '=' in the SELECT field and press ENTER, the DIS line command is executed for database ISTJE2DE.

When the '=' line command is entered multiple times, as shown in Figure 18 on page 37, the next line command is executed when DB2 Admin returns from executing the current line command; the panel where the '=' line commands are entered is not shown between executions of the line commands.

```
DB2 Admin ------------------- DB2W Databases ----------------  ROW 1 TO 5 OF 5
Command ===>                                                  Scroll ===> PAGE

Valid line commands are:
 T - Tables  S - Table spaces  X - Indexes  G - Storage group  ICS - IC status
 DIS - Display database  STA - Start database  STO - Stop database  A - Auth
 ? - Show all line commands
                         Storage  Buffer          Created  R Read Only Share
Select Name     Owner    Group    Pool       DBID By       S Timestamp
       *        *        *        *        *      *        * *
------ -------- -------- -------- -------- ------ -------- - ------------------
       D        ISTJE2   G        BP0         293 ISTJE2     0001-01-01-00.00.0
*IS    ISTJE2DC ISTJE2   ISTJE2GC BP0         295 ISTJE2     0001-01-01-00.00.0
=      ISTJE2DE ISTJE2   ISTJE2GE BP0         269 ISTJE2     0001-01-01-00.00.0
       ISTJE2DS ISTJE2   ISTJE2G  BP0         296 ISTJE2     0001-01-01-00.00.0
       ISTJE2DV ISTJE2   ISTJE2G  BP0         294 ISTJE2     0001-01-01-00.00.0
****************************** END OF DB2 DATA ******************************
```

Figure 17. Issuing the '=' Line Command

```
DB2 Admin ------------------- DB2W Databases ----------------  ROW 1 TO 5 OF 5
Command ===>                                                  Scroll ===> PAGE

Valid line commands are:
 T - Tables  S - Table spaces  X - Indexes  G - Storage group  ICS - IC status
 DIS - Display database  STA - Start database  STO - Stop database  A - Auth
 ? - Show all line commands
                          Storage  Buffer          Created  R Read Only Share
Select Name     Owner    Group    Pool       DBID By       S Timestamp
       *        *        *        *        *      *        * *
------ -------- -------- -------- -------- ------ -------- - ------------------
       D        ISTJE2   G        BP0         293 ISTJE2     0001-01-01-00.00.0
*IS    ISTJE2DC ISTJE2   ISTJE2GC BP0         295 ISTJE2     0001-01-01-00.00.0
       ISTJE2DE ISTJE2   ISTJE2GE BP0         269 ISTJE2     0001-01-01-00.00.0
=      ISTJE2DS ISTJE2   ISTJE2G  BP0         296 ISTJE2     0001-01-01-00.00.0
=      ISTJE2DV ISTJE2   ISTJE2G  BP0         294 ISTJE2     0001-01-01-00.00.0
****************************** END OF DB2 DATA *******************************
```

Figure 18. Issuing the '=' Line Command Multiple Times

Slash ('/') Line Command: Use the '/' line command to show all column names and their values for the item that you select.

More than one '/' line command may be entered at a time.

Figure 19 shows use of the '/' line command. A '/' is placed next to database ISTJE2DC. Figure 20 shows the result. All column names and their values from the catalog table (SYSIBM.SYSDATABASE in this case) are displayed.

```
DB2 Admin ------------------- DB2W Databases ----------------  ROW 1 TO 5 OF 5
Command ===>                                                 Scroll ===> PAGE

Valid line commands are:
 T - Tables  S - Table spaces  X - Indexes  G - Storage group  ICS - IC status
 DIS - Display database  STA - Start database  STO - Stop database  A - Auth
 ? - Show all line commands
                          Storage  Buffer          Created  R Read Only Share
Select Name     Owner    Group    Pool       DBID By       S Timestamp
       *        *        *        *        *      *        * *
------ -------- -------- -------- -------- ------ -------- - ------------------
       D        ISTJE2   G        BP0         293 ISTJE2     0001-01-01-00.00.0
/      ISTJE2DC ISTJE2   ISTJE2GC BP0         295 ISTJE2     0001-01-01-00.00.0
       ISTJE2DE ISTJE2   ISTJE2GE BP0         269 ISTJE2     0001-01-01-00.00.0
       ISTJE2DS ISTJE2   ISTJE2G  BP0         296 ISTJE2     0001-01-01-00.00.0
       ISTJE2DV ISTJE2   ISTJE2G  BP0         294 ISTJE2     0001-01-01-00.00.0
****************************** END OF DB2 DATA *******************************
```

Figure 19. Issuing the '/' Line Command

```
DB2 Admin -------------- DB2 Result of the SQL SELECT -------  ROW 1 TO 9 OF 9
Command ===>                                                 Scroll ===> PAGE

L COLUMN_NAME        COLUMN_VALUE
  *                  *
- ------------------ --------------------------
  NAME               ISTJE2DC
  CREATOR            ISTJE2
  STGROUP            ISTJE2GC
  BPOOL              BP0
  DBID                  295
  IBMREQD            N
  CREATEDBY          ISTJE2
  ROSHARE
  TIMESTAMP          0001-01-01-00.00.00.000000
****************************** END OF DB2 DATA *******************************
```

Figure 20. Result of Issuing the '/' Line Command

Invoking DB2 Admin

Before invoking DB2 Admin, you may want to review the chapter on customization to understand the different run time parameters that can be set.

There are two CLISTs in the SADBCLST library for executing DB2 Admin:

- ADB
- ADBL

Use the **ADB** CLIST when the DB2 Admin libraries are allocated by your TSO LOGON procedure. Use the **ADBL** CLIST when the DB2 Admin libraries need to be allocated before the product is executed.

You can invoke the ADB and ADBL CLISTs from any ISPF panel or from the ISPF command processor panel (usually ISPF option 6). You might want to put the prefix % in front of the CLIST name to ensure that TSO/E only searches the CLIST libraries specified with the ALTLIB command or allocated to the SYSPROC file.

There are several CLIST parameters you might be interested in using. When using CLIST ADBL, you can use the PROD parameter to override the prefix for all DB2 Admin product libraries, or alternatively you could edit the ADBL CLIST and specify the prefix there. You might find it useful to use the SYSTEM(ssid) parameter to access a specific DB2 subsystem directly. You can use the SHOW parameter to start your DB2 Admin session with a panel showing all active DB2 subsystems available to you. The DEBUG and DUMP parameters can be used for debugging. Other CLIST parameters can override customization parameters. If your installation uses variable-length CLIST and EXEC libraries, you will find the VB parameter useful for accessing the SADBCLST.VB and SADBEXEC.VB libraries created in step 8 of installation. (For a complete list and explanation of CLIST parameters, browse the ADB and ADBL CLISTs.)

Example 1: One way to invoke DB2 Admin for DB2 subsystem ABCD is to enter the following on the command line on the ISPF main menu:

```
TSO %ADBL SYSTEM(ABCD)
```

Example 2: One way to invoke DB2 Admin and have a panel of all active DB2 subsystems from which you can choose shown first is to enter the following on the command line on the ISPF command processor panel (usually option 6):

```
ADBL SHOW
```

Chapter 4. DB2 Admin Demo

This chapter demonstrates a DB2 Admin dialog. The purpose of the demo is to show the interactive nature of the product.

Although the demo does show some of DB2 Admin's major functions, only a thin layer of the *available* function is actually shown. For an understanding of the function that is available, you need to see the panel chapters later in this book.

Figure 21 shows the menu panel you see when you bring up DB2 Admin. The top of the panel shows the DB2 Admin functions you can choose. The bottom of the panel shows other DB2 tools (in this case DB2I) that can be invoked from the menu panel; this is a customization option.

Choose option 1 on this panel (as shown) to go to the DB2 system catalog function. The demo shows only this function.

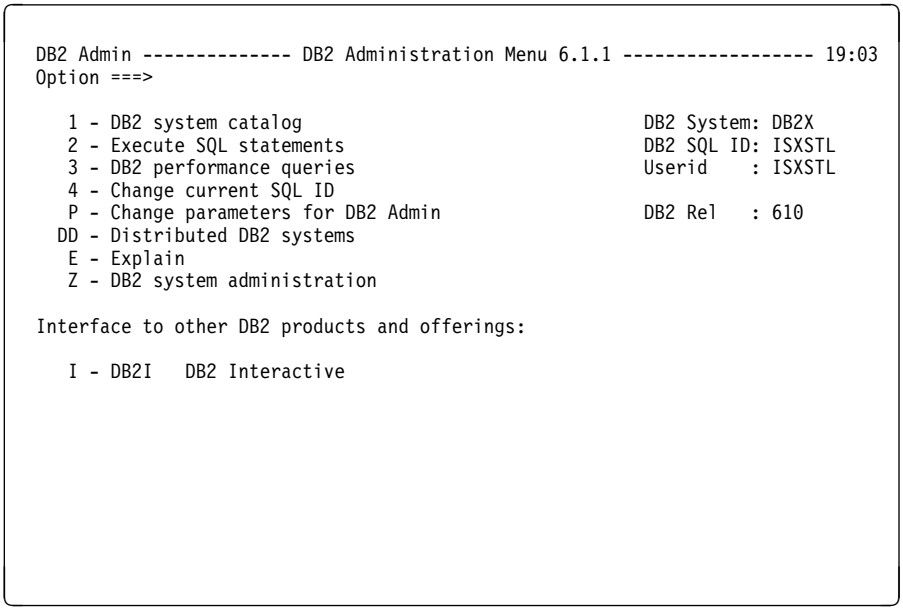

Figure 21. DB2 Administration Menu (Demo Panel)

Figure 22 shows the menu for the system catalog function. Choose option D on this panel, which requests display of the databases in the DB2 system catalog. You can limit the search by specifying a search argument in the name field. Here DSN was specified as a search argument.

```
DB2 Admin ---------------------- DB2X System Catalog ---------------------- 12:39
Option ===> D


Options:                                              DB2 System: DB2X
   V - Volumes                                        DB2 SQL ID: ISTJE
   G - Storage groups              GA - Authorizations to storage groups
   D - Databases                   DA - Authorizations to databases
   S - Table spaces                SA - Authorizations to tables spaces
   T - Tables, views, and aliases  TA - Authorizations to tables and views
   X - Indexes
   C - Columns                     CA - Authorizations to columns
   Y - Synonyms
   P - Plans                       PA - Authorizations to plans
   K - Packages                    KA - Authorizations to packages
   L - Collections                 LA - Authorizations to collections
   M - DBRMs                       RA - Authorizations to resources
  DS - Database structures         ZA - Authorizations to system privileges
   H - Schemas                     HA - Authorizations to schemas
   E - User defined data types     EA - Authorizations to data types
   F - Functions                   FA - Authorizations to functions
   O - Stored procedures           OA - Authorizations to stored procedures
   J - Triggers
Enter standard selection criteria (an SQL LIKE operator will be used):
Name       ===> DSN                Grantor  ===>
Owner      ===>                    Grantee  ===>
In D/L/H   ===>                    CatCopy  ===> NO  (Y/N to use catalog copy)
And/or other selection criteria (option xC shows you columns for option x)
Column     ===>                    Operator ===>       Value ===>
```

Figure 22. System Catalog Menu (Demo Panel)

Figure 23 shows the ISPF table display panel DB2 Admin returns. All databases that meet the search criteria (DSN) are displayed in the name field.

```
DB2 Admin ------------------- DB2X Databases ---------------------- Row 1 of 9
Command ===> SORT                                          Scroll ===> PAGE

Valid line commands are:
 T - Tables  S - Table spaces  X - Indexes  G - Storage group  ICS - IC status
 DIS - Display database  STA - Start database  STO - Stop database  A - Auth
 ? - Show all line commands
                       Storage  Buffer          Created      Index
Select Name     Owner  Group    Pool       DBID By       T E Buffer Pool
       *        *      *        *        *      *        * * *
------ -------- -------- -------- -------- ------ -------- - - -----------
       DSNDB04  SYSIBM   SYSDEFLT BP1           4 SYSIBM       BP2
       DSNDB06  SYSIBM                          6 SYSIBM     E BP0
       DSNDB07  DSCGDB2  SYSDEFLT BP1           7 ISTJE    W   BP2
       DSNRGFDB DSCGDB2  SYSDEFLT BP1         257 ISTJE      E BP2
       DSNRLST  DSCGDB2  SYSDEFLT BP1         256 ISTJE      E BP2
       DSN8D61A DSCGDB2  DSN8G610 BP1         258 ISTJE      E BP2
       DSN8D61L DSCGDB2  DSN8G610 BP1         261 ISTJE      E BP2
       DSN8D61P DSCGDB2  DSN8G610 BP1         259 ISTJE      E BP2
       DSN8D61U DSCGDB2  DSN8G61U BP1         260 ISTJE      E BP2
****************************** END OF DB2 DATA *******************************
```

Figure 23. Databases Whose Name Is Qualified (Demo Panel)

You can change a display in several ways. You can sort alphabetically on one or more columns or include only columns with certain values. Figure 24 shows the information DB2 Admin returns when a SORT primary command is issued. You can also sort any column by putting the cursor in the column and entering the SORT command.

```
DB2 Admin ------------------- DB2X Databases ---------------------- Row 1 of 9
Command ===>                                                  Scroll ===> PAGE
Sort performed
Valid line commands are:
 T - Tables  S - Table spaces  X - Indexes  G - Storage group  ICS - IC status
 DIS - Display database  STA - Start database  STO - Stop database  A - Auth
 ? - Show all line commands
                         Storage  Buffer          Created      Index
Select Name     Owner    Group    Pool       DBID By       T E Buffer Pool
       *        *        *        *        *      *        * * *
------ -------- -------- -------- -------- ------ -------- - - -----------
       DSNDB07  DSCGDB2  SYSDEFLT BP1           7 ISTJE    W   BP2
       DSNRGFDB DSCGDB2  SYSDEFLT BP1         257 ISTJE      E BP2
       DSNRLST  DSCGDB2  SYSDEFLT BP1         256 ISTJE      E BP2
S      DSN8D61A DSCGDB2  DSN8G610 BP1         258 ISTJE      E BP2
       DSN8D61L DSCGDB2  DSN8G610 BP1         261 ISTJE      E BP2
       DSN8D61P DSCGDB2  DSN8G610 BP1         259 ISTJE      E BP2
       DSN8D61U DSCGDB2  DSN8G61U BP1         260 ISTJE      E BP2
       DSNDB04  SYSIBM   SYSDEFLT BP1           4 SYSIBM       BP2
       DSNDB06  SYSIBM                         6 SYSIBM     E BP0
****************************** END OF DB2 DATA *******************************
```

Figure 24. Databases After SORT CREATOR Issued (Demo Panel)

Using DB2 Admin line commands, you can navigate the catalog. If in Figure 24 you put an S line command in the select field next to database DSN8D61D, DB2 Admin will display all table spaces in database DSN8D61D. This is shown in Figure 25.

```
DB2 Admin ------------------ DB2X Table Spaces -------------------- Row 1 of 5
Command ===>                                                  Scroll ===> PAGE

Valid line commands are:
 T -Tables  D - Database  A - Auth  G - Storage group  ICS - Image copy status
 DIS - Display database  STA - Start database  STO - Stop database
 ? - Show all line commands

Select Name     Owner    DB Name  BP   L E S I C Ntable    N Active Segsz  T L
       *        *        *        *    * * * * * *      *           *      * *
------ -------- -------- -------- ---- - - - - - ------ ----------- ------ - -
utl    DSN8S61D DSCGDB2  DSN8D61A BP1  P N A N N      1          12      0   Y
       DSN8S61E DSCGDB2  DSN8D61A BP1  P N A N N      1         120      0   Y
       DSN8S61R DSCGDB2  DSN8D61A BP1  P N A N N      6           0      0   Y
       DSN8S61P DSCGDB2  DSN8D61A BP1  R N A N N      4          24      4   Y
       DSN8S61S DSCGDB2  DSN8D61A BP1  P N A N N      1           0      0   Y
****************************** END OF DB2 DATA *******************************
```

Figure 25. Table Spaces In a Database (Demo Panel)

From the Table Spaces panel, you can issue DB2 commands against DB2 objects. As shown in Figure 26, output from a DB2 command is shown in ISPF browse.

```
DB2 Admin ------- DB2X Browse DB2 Command Output ---  Line 00000000 Col 001 080
Command ===>                                                 Scroll ===> PAGE

-DIS DB(DSN8D61A) SPACENAM(DSN8S61D) LIMIT(*)


******************************** Top of Data ********************************
DSNT360I DB2X ***********************************
DSNT361I DB2X *  DISPLAY DATABASE SUMMARY
              *    GLOBAL
DSNT360I DB2X ***********************************
DSNT362I DB2X     DATABASE = DSN8D61A  STATUS = RW
                  DBD LENGTH = 16142
DSNT397I DB2X
NAME     TYPE PART STATUS             PHYERRLO PHYERRHI CATALOG  PIECE
-------- ---- ---- ------------------ -------- -------- -------- -----
DSN8S61D TS        RW
******* DISPLAY OF DATABASE DSN8D61A ENDED      **********************
DSN9022I DB2X DSNTDDIS 'DISPLAY DATABASE' NORMAL COMPLETION
******************************** Bottom of Data ********************************
```

Figure 26. ISPF Browse Output After DB2 Command (Demo Panel)

Back to the Table Spaces panel (Figure 25 on page 43), you can run a utility by specifying line command UTL for table space DSN8S61D. DB2 Admin responds by displaying the utilities that can be run against a table space, as shown in Figure 27.

```
DB2 Admin ------------------ DB2X Table Space Utilities ----------------- 12:41
Option ===> C

   C - Copy full           CI - Copy incremental         DB2 System: DB2X
  CC - Copy concurrent                                   DB2 SQL ID: ISTJE
   E - Mergecopy           EN - Mergecopy newcopy
   K - Check index         KD - Check data
   M - Modify
  MA - Modify records before date ===>        (YYMMDD)
  MB - Modify records older than  ===>        (days)
   N - Repair nocopypend   NA - Repair nocheckpend   NB - Repair norcvrpend
   O - Reorg               OU - Reorg unload only
   P - Report recovery
   Q - Quiesce
   R - Runstats            RT - Runstats table all   RR - Runstats report
   V - Recover             VC - Recover tocopy       VG - Recover to last GDG
  VI - Recover index       VR - Recover torba        VL - Recover logonly
  DG - Define GDG for copy data sets
   on table space DSN8D61A.DSN8S61D

  BP - Change batch job parameters
```

Figure 27. Table Space Utilities Menu (Demo Panel)

You can run the COPY utility against the table space by specifying option C, which requests a full image copy. Figure 28 shows the utility JCL DB2 Admin returns to you. The JCL is ready to be submitted.

```
DB2 Admin ---------------- Edit Generated JCL --------------- Columns 001 072
Command ===>                                                  Scroll ===> HALF

000009 //* DB2 ADMIN GENERATED JOB TO RUN COPY ON SELECTED TABLESPACES
000010 //*
000011 //*********************************************************************
000012 //*
000013 //*********************************************************************
000014 //* STEP COPY: COPY TABLESPACE DSN8D61A.DSN8S61D
000015 //*********************************************************************
000016 //COPY EXEC DSNUPROC,SYSTEM=DB2X,
000017 //             LIB='SYS1.DB2X.SDSNLOAD',
000018 //             UID='ISTJE2'
000019 //DSNUPROC.SYSCOPY DD DSN=ISTJE2.DB2X.IC.DSN8D61A.DSN8S61D(+1),
000020 //             DISP=(NEW,CATLG),
000021 //             SPACE=(8192,(7,5),RLSE),
000022 //             UNIT=SYSDA
000023 //DSNUPROC.SYSIN  DD  *
000024 COPY TABLESPACE DSN8D61A.DSN8S61D DSNUM ALL FULL YES
000025 /*
000026 //*************************************************************
000027 //* STEP MOD: MODIFY RECOVERY TABLESPACE DSN8D61A.DSN8S61D
000028 //*************************************************************
000029 //MOD EXEC DSNUPROC,SYSTEM=DB2X,
000030 //             LIB='SYS1.DB2X.SDSNLOAD',
000031 //             UID='ISTJE2'
000032 //DSNUPROC.SYSIN  DD  *
000033 MODIFY RECOVERY TABLESPACE DSN8D61A.DSN8S61D DSNUM ALL
000034   DELETE AGE(35)
000025 /*
```

Figure 28. JCL for a Utility (Demo Panel)

Back to the Table Spaces panel again (Figure 25 on page 43), you can determine what tables are in a table space by issuing line command T. Figure 29 shows the tables in table space DSN8S61D.

```
DB2 Admin ----------- DB2X Tables, Views, and Aliases ----------- - Row 1 of 1
Command ===>                                                  Scroll ===> PAGE

Valid line commands are:
 C - Columns  A - Auth  L - List  X - Indexes  S - Table space  D - Database
 V - Views  T - Tables  P - Plans  Y - Synonyms  SEL - Select prototyping
 ? - Show all line commands

Sel   Name               Owner    T DB Name  TS Name    Cols        Rows Checks
      *                  *        * *        *        *      *           *
----- ------------------ -------- - -------- -------- ------ ----------- ------
C     DEPT               DSN8610  T DSN8D61A DSN8S61D      5          14      0
****************************** END OF DB2 DATA *******************************
```

Figure 29. Tables in a Table Space (Demo Panel)

To see the columns in a table, use the C line command. The result is shown in Figure 30.

```
DB2 Admin ----- DB2X Columns in Table: DSN8610.DEPT --------------- Row 1 of 5
Command ===>                                                  Scroll ===> PAGE

Valid line commands are:
 T - Tables  X - Indexes  A - Auth  GR - Grant  H - Homonyms  I - Interpret
 UR - Update runstats  LAB - Label  COM - Comment  DI - Distribution stats
 PST - Partition stats   E  - Source data type

Select Column Name        Col No Col Type Length Scale  Null Def FP    Col Card
       *                  *      *        *      *      *    *   *  *
------ ------------------ ------ -------- ------ ------ ---- --- -- -----------
       DEPTNO                  1 CHAR          3      0 N    N   N           14
       DEPTNAME                2 VARCHAR      36      0 N    N   N           -1
       MGRNO                   3 CHAR          6      0 Y    Y   N            9
       ADMRDEPT                4 CHAR          3      0 N    N   N            3
       LOCATION                5 CHAR         16      0 Y    Y   N           -1
****************************** END OF DB2 DATA *******************************
```

Figure 30. Columns In a Table (Demo Panel)

And to see the indexes for a table, use the X line command. Figure 31 shows the information that is returned.

```
DB2 Admin ---------------------- DB2X Indexes ---------------------- Row 1 of 3
Command ===>                                                 Scroll ===> PAGE

Valid line commands are:
 T - Tables  D - Database  G - Storage group  P - Plans  C - Columns
 DIS - Display database  STA - Start database  STO - Stop database
 ? - Show all line commands

                        Index                          Table             C C C
Select Index Name       Owner    Table Name            Owner    U   Cols G D L T
       *                *        *                     *        * *      * * * *
------ ---------------- -------- ------------------ -------- - ------ - - - -
       XDEPT1           DSN8610  DEPT               DSN8610  P      1 N Y Y 2
       XDEPT2           DSN8610  DEPT               DSN8610  D      1 N Y N 2
       XDEPT3           DSN8610  DEPT               DSN8610  D      1 N Y N 2
****************************** END OF DB2 DATA ******************************
```

Figure 31. Indexes for a Table (Demo Panel)

You can find the authorizations for any DB2 object by issuing line command A. Figure 32 shows the output DB2 Admin returns when line command A is issued against table DEPT.

```
DB2 Admin ----------------- DB2 Table Authorizations -------------- Row 1 of 2
Command ===>                                                 Scroll ===> PAGE

Valid line commands are:
 R - Revoke  GR - Grant  T - Table  I - Interpretation     U   D   I S U   R
 CA - Column authorisations                                P A E I N E P R E
                                                           D L L N S L D E F T
                                                           C T E D E E A F C R
                    G                              H Date  O E T E R C T E O I
S  Grantor  Grantee  T Owner    Name                G Grant L R E X T T E R L G
   *        *        * *        *                   * *     * * * * * * * * * *
-- -------- -------- - -------- ------------------ - ------ - - - - - - - - - -
GR DSN8610  DSN8610    DSN8610  DEPT               S 990115   G G G G G G G   G
   DSCGDB2  PUBLIC*    DSN8610  DEPT               S 990115     Y   Y Y Y
****************************** END OF DB2 DATA ******************************
```

Figure 32. Authorizations for a DB2 Object (Demo Panel)

The GR line command lets you grant privileges. Figure 33 shows the information returned when GR is issued against table DEPT.

```
DB2 Admin ----------------- DB2X Grant Table Privileges ----------------- 12:43
Command ===>

 GRANT

 Specify Y or G (for with grant option) or ' ' (for none)

  ALL             INDEX           UPDATE
  ALTER           INSERT          REFERENCES
  DELETE        y SELECT

 ON TABLE

 Owner   ===> DSN8610
 Table   ===> DEPT

 TO

 To      ===> userx
```

Figure 33. Grant Privileges for a Table (Demo Panel)

From the Tables panel (Figure 29 on page 46), you can request the SQL source that created a view. To do this, issue line command VS. As shown in Figure 34, you can request that DB2 Admin display the definition of the view using ISPF edit.

```
DB2 Admin -------------- DB2X Create View Source Statements ------------- 12:43
Command ===>

Valid primary commands are:  BR - Browse  E - Edit  EX - Edit/Execute

 ------------------------- Create View Source Statement -----------------------
CREATE VIEW DSN8610.VDEPT
   AS SELECT ALL      DEPTNO  ,
                      DEPTNAME,
                      MGRNO   ,
                      ADMRDEPT
   FROM DSN8610.DEPT
```

Figure 34. SQL Source that Created a View (Demo Panel)

From the Tables panel (Figure 29 on page 46), you can access the application plans that use table DEPT. To do this, enter line command P. Figure 35 is returned.

```
DB2 Admin ---------------- DB2X Application Plans ----------------- Row 1 of 1
Command ===>                                                  Scroll ===> PAGE

Valid line commands are:
 DEP - Depend  A - Auth  T - Tables  V - Views  X - Indexes  S - Table spaces
 Y - Synonyms  M - DBRMs  RB - Rebind  F - Free  B - Bind  GR - Grant
 PL - Package list  LP - List PLAN_TABLE  I - Interpret  ENDI - Enab/disab con
 K - Local packages  SQ - SQL
                        Bind   Bind   V I V O Bound    Quali-     Pack A R E D
Select Name     Owner   Date   Time   D S A P By       fier      Lists Q L X R
       *        *       *      *      * * * * *        *        *      * * * *
------ -------- -------- ------ ------ - - - - -------- -------- ------ - - - -
M      DSN8BH61 DSCGDB2  990115 142711 R S Y Y ISTJE    DSCGDB2       0 U C N
****************************** END OF DB2 DATA *******************************
```

Figure 35. Application Plans That Use a Table (Demo Panel)

Use the M line command from the Application Plans panel to display the DBRMs for an application plan. Figure 36 shows the output DB2 Admin returns when line command M is issued against application plan DSN8BH61.

```
DB2 Admin ---------------------- DB2X DBRMs ----------------------- Row 1 of 1
Command ===>                                                  Scroll ===> PAGE

Valid line commands are:
 P - Plans  B - Browse DBRM  S - SQL statements  I - Interpretation

S Name     Owner    PL Name  Q C H P Date P Time   PDS Name
  *        *        *        * * * *      *        *
- -------- -------- -------- - - - ------ -------- ----------------------------
S DSN8BC3  DSCGDB2  DSN8BH61 N N 3 990115 14270156 DB2.DSN610.DBRMLIB.DATA
****************************** END OF DB2 DATA *******************************
```

Figure 36. DBRMs for an Application Plan (Demo Panel)

To request the actual SQL statements in the DBRM, issue line command S. The result is shown in Figure 37.

```
DB2 Admin ----------------- Extracted SQL ---------------- Columns 00001 00072
Command ===>                                                 Scroll ===> HALF

****** ***************************** Top of Data ******************************
000001 -- SQL statements in DBRM: DSN8BH61.DSN8BC3
000002 -- SQL in stmt: 244
000003 DECLARE VPHONE TABLE (LASTNAME VARCHAR (15) NOT NULL, FIRSTNAME VARCHAR
000004 (12) NOT NULL, MIDDLEINITIAL CHAR (01) NOT NULL, PHONENUMBER CHAR (04),
000005 EMPLOYEENUMBER CHAR (06) NOT NULL, DEPTNUMBER CHAR (03) NOT NULL,
000006 DEPTNAME VARCHAR (36) NOT NULL)
000007 -- SQL in stmt: 277
000008 DECLARE VEMPLP TABLE (EMPLOYEENUMBER CHAR (06) NOT NULL, PHONENUMBER
000009 CHAR (04) )
000010 -- SQL in stmt: 287
000011 DECLARE TELE1 CURSOR FOR SELECT * FROM VPHONE
000012 -- SQL in stmt: 295
000013 DECLARE TELE2 CURSOR FOR SELECT * FROM VPHONE WHERE LASTNAME LIKE :H
000014 AND FIRSTNAME LIKE :H
000015 -- SQL in stmt: 305
000016 DECLARE TELE3 CURSOR FOR SELECT * FROM VPHONE WHERE LASTNAME = :H AND
000017 FIRSTNAME LIKE :H
000018 -- SQL in stmt: 335
000019 WHENEVER SQLERROR GOTO DBERROR
000020 -- SQL in stmt: 336
000021 WHENEVER SQLWARNING GOTO DBERROR
000022 -- SQL in stmt: 337
000023 WHENEVER NOT FOUND CONTINUE
000024 -- SQL in stmt: 432
000025 OPEN TELE1
```

Figure 37. SQL Statements in a DBRM (Demo Panel)

From the Application Plans panel (Figure 35 on page 49), you can issue a BIND, REBIND, or FREE of a plan. Figure 38 shows the result when you request a BIND of application plan DSN8BH61.

```
DB2 Admin ------------------ DB2X Bind Application Plan ----------------- 12:45
Command ===>

                                                                      More:     +
 Verify BIND parameters:

 BIND PLAN(
 Plan name       ===> DSN8BH61
 ) OWNER(
 Plan owner      ===> DSCGDB2
 ) QUALIFIER(
 Qualifier       ===> DSCGDB2  (qualifier to resolve unqualified SQL)
 ) MEMBER(                     (use ? to get current values from the catalog)
 DBRM members    ===> ?



 ) LIBRARY                     (use ? to get current values from the catalog)
 DBRM data sets  ===> ?



 ) PKLIST(                     (use ? to get current values from the catalog)
 Package lists   ===>



 ) DEFER(PREPARE)
 Defer prepare   ===> N        (Yes or No, used for distributed dynamic SQL)
 ) VALIDATE(
 Validation time ===> R        (Run or Bind, Bind preferred)
```

Figure 38. BIND of an Application Plan (Demo Panel)

Using the catalog, DB2 Admin automatically finds the DBRM members and libraries for the BIND. These are displayed when you press ENTER, as shown in Figure 39.

```
DB2 Admin ------------------ DB2X Bind Application Plan ----------------- 12:52
Command ===>

                                                                      More:     +
 Verify BIND parameters:

 BIND PLAN(
 Plan name       ===> DSN8BH61
 ) OWNER(
 Plan owner      ===> DSCGDB2
 ) QUALIFIER(
 Qualifier       ===> DSCGDB2  (qualifier to resolve unqualified SQL)
 ) MEMBER(                     (use ? to get current values from the catalog)
 DBRM members    ===> DSN8BC3



 ) LIBRARY                     (use ? to get current values from the catalog)
 DBRM data sets  ===> 'DB2.DSN610.DBRMLIB.DATA'



 ) PKLIST(                     (use ? to get current values from the catalog)
 Package lists   ===>



 ) DEFER(PREPARE)
 Defer prepare   ===> N        (Yes or No, used for distributed dynamic SQL)
 ) VALIDATE(
 Validation time ===> R        (Run or Bind, Bind preferred)
```

Figure 39. DBRM Members and Libraries for the BIND (Demo Panel)

If an SQL error occurs DB2 Admin displays the DSNTIAR message, as shown in Figure 40.

```
DB2 Admin ---------------------- DB2 Error Display 1 ---------------------- 12:54
Command ===>
Rollback done
   SQLCODE : -206                          DSNTIAR CODE :  0

DSNT408I SQLCODE = -206, ERROR:  T.TYP IS NOT A COLUMN OF AN INSERTED TABLE,
         UPDATED TABLE, OR ANY TABLE IDENTIFIED IN A FROM CLAUSE, OR IS NOT A
         COLUMN OF THE TRIGGERING TABLE OF A TRIGGER
DSNT418I SQLSTATE   = 42703 SQLSTATE RETURN CODE
DSNT415I SQLERRP    = DSNXORSO SQL PROCEDURE DETECTING ERROR
DSNT416I SQLERRD    = -600  0  0  -1  0  0 SQL DIAGNOSTIC INFORMATION
DSNT416I SQLERRD    = X'FFFFFDA8'  X'00000000'  X'00000000'  X'FFFFFFFF'
         X'00000000'  X'00000000' SQL DIAGNOSTIC INFORMATION
```

Figure 40. DSNTIAR Error Messages (Demo Panel)

When you press ENTER you get another error display panel, which shows the actual SQL statement in error. See Figure 41.

```
 DB2 Admin ---------------------- DB2 Error Display 2 ---------------------- 12:54
 Command ===>

    SQLCODE : -206                          DSNTIAR CODE :  0

PREPARE

SELECT T.* FROM SYSIBM.SYSTABLES T  WHERE  T.CREATOR LIKE 'DSN%' and T.TYP = 'V'
 FOR FETCH ONLY
```

Figure 41. SQL Statement in Error (Demo Panel)

If you want interpretive information about an object in the DB2 catalog, you can use line command I. Figure 42 shows the result when you issue line command I against application plan DSN8SP41.

```
DB2 Admin --------- DB2X Interpretation of an Object in SYSPLAN --------- 12:54
Option ===>

Details for application plan : DSN8BH61
                                                                More:     +
Authorization ID of owner        : DSCGDB2
Authorization ID of creator      : ISTJE
Qualifier for unqualified SQL    : DSCGDB2
Date for latest BIND of plan     : 990115   (yymmdd)
Time for latest BIND of plan     : 14271167 (hhmmssth)
Time when the plan was bound     : 1999-01-15-14.27.11.679553
SQL rules specified at BIND      : D - DB2
Cache size for auth IDs in bytes : 256
Operative status of plan         : Plan is valid and operative
Resource and authorization check : At plan allocation time
Plan base section size (bytes)   : 3080     (in EDM pool during execution)
Average DML section size (bytes) : 4802     (loaded when needed during exec)
Plan bound with EXPLAIN option   : NO
Plan bound with DEFER(PREPARE)   : No - DEFER(PREPARE) not specified
Number of PACKAGE list entries   : 0
Number of enabled/disabled sys   : 0
Current server                   :
Disconnect option used           : E - explicit. Release locations at commit
Data concurrency                 : C - required for ambiguous cursors
  Effect on blocking             : Inhibit blocking for ambiguous cursors
DEGREE of I/O parallelism        : 1 - parallel I/O inhibited
Group member that performed BIND :
Dynamic SQL rules                : Not specified - use the rules for the plan
Re-optimize SQL at execution time: No - access path determined at BIND time
Keep prepared dynamic SQL stmts  : No - are destroyed at COMMIT
Protocol for 3 part names        : D
```

Figure 42. Interpretation of an Object (Demo Panel)

DB2 Admin lets you reverse engineer objects in your DB2 catalog (that is, extract the DDL required to re-create the DB2 objects). The starting point for reverse engineering can be databases, table spaces, tables, schemas, data types, functions, or stored procecures.

Figure 43 shows the panel that is displayed when reverse engineering of database DSN8D61A is requested.

```
DB2 Admin -------------- DB2X Generate SQL from DB2 Catalog ------------- 22:12
Option ===>

 Generate SQL statements for database DSN8D61A           DB2 System: DB2X
                                                         DB2 SQL ID: ISTJE

 SQL statement types to be generated from the DB2 catalog:
   CREATE DATABASE. . . . . : Y        GRANT access ON DATABASE. :  Y
   CREATE TABLESPACE. . . . : Y        GRANT access ON TABLESPACE:  Y
   CREATE TABLE . . . . . . : Y        GRANT access ON TABLE. . . : Y
   CREATE VIEW  . . . . . . : Y        GRANT access ON VIEW . . . : Y
   CREATE INDEX . . . . . . : Y        ALTER TABLE ADD FOREIGN KEY: Y
   CREATE SYNONYM . . . . . : Y        LABEL ON . . . . . . . . . : Y
   CREATE ALIAS . . . . . . : Y        COMMENT ON . . . . . . . . : Y
   CREATE TRIGGER . . . . . : Y

 New names/values for generated SQL: (leave blank to use current values)
   Object owner . . . . . :
   Alloc TS size as . . . . : DEFINED  (DEFINED, USED, or ALLOC)
   Database name. . . . . :
   Storage group for TS . . :          Storage group for IX . . . :
   Target DB2 version . . . :          (Current DB2 version: 610)

 Output file and execution mode:
   Data set name  . . . . . : TEST.DB2(X)
     Data set disposition . : OLD      (OLD, SHR, or MOD)
   Execution mode . . . . . : BATCH    (BATCH or TSO)
   Commit statements per  . : A        (Db, tS, Tb, All, None)
   DB2 defaults handling. . : K        (Keep, or Remove)

 BP - Change batch job parameters
```

Figure 43. Generate SQL from DB2 Catalog Panel (Demo Panel)

Figure 44 on page 56 shows part of the result of running reverse engineering on this database.

```
-------------------------------------------------------------------------
--                                                                     --
-- Database 2 Administration Tool (DB2 Admin), program 5645-DB2 (C)    --
--                                                                     --
-- ADB2GEN  -  Extract object definitions from the DB2 Catalog tables  --
--                                                                     --
-- Input prepared on : DB2X (610)     Extract time : 1999-01-20 14:20  --
--                                                                     --
-- Catalog values overridden :                              --         
--                                                                     --
--            Database=ISTJE61A  Stogroup (Tablespace)=ISTJEG          --
--            Creator =ISTJE     Stogroup (Indexspace)=ISTJEG          --
--                                                                     --
-- Generate : DB=Y TS=Y TB=Y VW=Y IX=Y SY=Y AL=Y LB=Y CM=Y FK=Y        --
-- Grants   : DB=Y TS=Y TB=Y VW=Y                                      --
--                                                                     --
-------------------------------------------------------------------------
-------------------------------------------------------------------------
--                                                                     --
-- ADB2GEN: Generate DDL for Database ISTJE61A                         --
--                                                                     --
-------------------------------------------------------------------------
--
--
-------------------------------------------------------------------------
-- Database=ISTJE61A   Stogroup=ISTJEG
-------------------------------------------------------------------------
--
--
  CREATE DATABASE ISTJE61A
    BUFFERPOOL BP1
    CCSID      EBCDIC
    STOGROUP ISTJEG ;
--
  GRANT DBADM
    ON DATABASE ISTJE61A TO PUBLIC;
--
  COMMIT;
--
-------------------------------------------------------------------------
-- Database=ISTJE61A   Stogroup=ISTJEG
-- Tablespace=ISTJE61A.DSN8S61D
-------------------------------------------------------------------------
--
  CREATE TABLESPACE DSN8S61D
    IN ISTJE61A
    USING STOGROUP ISTJEG
    PRIQTY 20 SECQTY 20
    LOCKSIZE PAGE
    CLOSE NO ;
--
  GRANT USE OF TABLESPACE ISTJE61A.DSN8S61D TO PUBLIC;
--
  COMMIT;
--
```

Figure 44 (Part 1 of 2). Reverse Engineering Output

```
-------------------------------------------------------------------------
--    Table=ISTJE.DEPT                 In ISTJE61A.DSN8S61D
-------------------------------------------------------------------------
--
  CREATE TABLE ISTJE.DEPT
     (DEPTNO               CHAR(3) NOT NULL  ,
      DEPTNAME             VARCHAR(36) NOT NULL  ,
      MGRNO                CHAR(6)  ,
      ADMRDEPT             CHAR(3) NOT NULL  ,
      LOCATION             CHAR(16)  ,
      PRIMARY KEY (DEPTNO) )
    IN ISTJE61A.DSN8S61D ;
--
  COMMIT;
--
-------------------------------------------------------------------------
-- Database=ISTJE61A   Stogroup=ISTJEG
--    Index=ISTJE.XDEPT1                On ISTJE.DEPT
-------------------------------------------------------------------------
--
  CREATE TYPE 2 UNIQUE INDEX ISTJE.XDEPT1
    ON ISTJE.DEPT
     (DEPTNO                ASC )
    USING STOGROUP ISTJEG
    PRIQTY 12 SECQTY 12
    CLOSE NO ;
--
.
.
.
```

Figure 44 (Part 2 of 2). Reverse Engineering Output

Chapter 5. DB2 Administration Menu Panel

Figure 45 shows the main menu panel for DB2 Admin.

Use this panel to select the function you want performed.

DB2 Admin includes a sample application as part of the product. (For more information about it, see Chapter 15, “Writing or Extending DB2 Admin Applications” on page 255.) You can access the sample application from this panel by specifying the "hidden" option S.

```
DB2 Admin -------------- DB2 Administration Menu 6.1.1 ------------------ 19:03
Option ===>

   1 - DB2 system catalog                                DB2 System: DB2X
   2 - Execute SQL statements                            DB2 SQL ID: ISXSTL
   3 - DB2 performance queries                           Userid    : ISXSTL
   4 - Change current SQL ID
   P - Change parameters for DB2 Admin                   DB2 Rel   : 610
  DD - Distributed DB2 systems
   E - Explain
   Z - DB2 system administration

Interface to other DB2 products and offerings:

   I - DB2I   DB2 Interactive



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 US Government Users Restricted Rights - Use, duplication or disclosure
 restricted by GSA ADP schedule contract with IBM Corp.
```

Figure 45. DB2 Administration Menu Panel (ADB2)

DB2 SYSTEM CATALOG
Select this option to display information from the catalog about DB2 objects and/or authorizations for those objects.

Chapter 6, “System Catalog Panels” on page 61 describes these panels.

EXECUTE SQL STATEMENTS
Select this option to execute SQL statements.

Chapter 8, “SQL Statements Panels” on page 149 describes these panels.

DB2 PERFORMANCE QUERIES
Select this option to run performance and space utilization queries against a database.

Chapter 9, “DB2 Performance Queries Panels” on page 159 describes these panels.

CHANGE CURRENT SQLID
Select this option to change your current SQL ID. This is the same as issuing the DB2 Admin primary command SQLID.

Chapter 10, “SQL ID Panels” on page 177 describes these panels.

CHANGE PARAMETERS FOR DB2 ADMIN

Select this option to change DB2 Admin parameters.

Chapter 11, “DB2 Admin Parameters Panels” on page 179 describes these panels.

DISTRIBUTED DB2 SYSTEMS

Select this option to see the system catalog panels for a remote DB2 system.

Chapter 12, “Distributed DB2 Systems Panels” on page 185 describes these panels.

EXPLAIN

Select this option to:

- Enter an SQL statement and see the resulting rows in a plan table (PLAN_TABLE).
- List rows from a plan table and see how DB2 will execute SQL statements in application plans, or packages that were bound with EXPLAIN(YES).
- Create and upgrade a plan table.

Chapter 13, “Explain Panels” on page 189 describes these panels.

DB2 SYSTEM ADMINISTRATION

Select this option to display a list of system administration functions.

Chapter 14, “System Administration Panels” on page 199 describes these panels.

Chapter 6. System Catalog Panels

This chapter describes the main system catalog panels. The System Catalog panels are the heart of the DB2 Admin product. Using these panels, you can:

- Display any object in the DB2 catalog
- Display related DB2 objects using DB2 Admin line commands
- Interpret catalog information
- Show the authorizations for DB2 objects
- Display the static SQL statements from application plans and packages
- Display the DDL for existing views
- Generate JCL for the DB2 utilities and then run them online
- Execute dynamic SQL statements
- Issue DB2 commands (for databases and table spaces)
- Display database structures
- Reverse engineer DB2 objects

System Catalog Panel

This panel (Figure 46) appears when you select option 1 on the DB2 Administration Menu panel.

Use this panel to display:

- Objects in the DB2 catalog
- Database structures
- Authorizations for objects in the catalog

Enter one of the object or authorization codes on the command line (for example, D for database). You can limit the information that is returned by entering one or more selection criteria at the bottom of the panel (for example, D402 would limit the search to databases whose name begins with D402). In response to your choices, DB2 Admin creates and executes an SQL statement that searches the DB2 catalog for the object or authorization you have requested.

For optimum performance, we recommend that you specify selection criteria for:

- Option T. Enter a value for "Owner" or "In D/L/H" (database, collection, or schema).
- All authorization options (xA). Enter a value for "Grantor" or "Grantee."

Option M can also be time-consuming, depending on how many plans and DBRMs you have.

```
DB2 Admin --------------------- DB2X System Catalog --------------------- 19:06
Option ===>


Options:                                                 DB2 System: DB2X
   V - Volumes                                           DB2 SQL ID: ISXSTL
   G - Storage groups              GA - Authorizations to storage groups
   D - Databases                   DA - Authorizations to databases
   S - Table spaces                SA - Authorizations to tables spaces
   T - Tables, views, and aliases  TA - Authorizations to tables and views
   X - Indexes
   C - Columns                     CA - Authorizations to columns
   Y - Synonyms
   P - Plans                       PA - Authorizations to plans
   K - Packages                    KA - Authorizations to packages
   L - Collections                 LA - Authorizations to collections
   M - DBRMs                       RA - Authorizations to resources
  DS - Database structures         ZA - Authorizations to system privileges
   H - Schemas                     HA - Authorizations to schemas
   E - User defined data types     EA - Authorizations to data types
   F - Functions                   FA - Authorizations to functions
   O - Stored procedures           OA - Authorizations to stored procedures
   J - Triggers
Enter standard selection criteria (an SQL LIKE operator will be used):
Name       ===>                  Grantor  ===>
Owner      ===>                  Grantee  ===>
In D/L/H   ===>
And/or other selection criteria (option xC shows you columns for option x)
Column     ===>                  Operator ===>       Value ===>
```

Figure 46. System Catalog Panel (ADB21)

Volumes Panel

This panel (Figure 47) appears when you select option V on the DB2 System Catalog panel.

Use this panel to display the volumes in the DB2 catalog.

```
DB2 Admin -------------------- DB2X Volumes -----------------  ROW 1 TO 4 OF 4
Command ===>                                                 Scroll ===> PAGE

Valid line commands are:
 G - Storage group  I - Interpretation

Select Volume   SG Name  SG Owner
       *        *        *
------ -------- -------- ---------
       *        G        ISTJE2
       *        ISTJE2G  ISTJE2
       *        ISTJE2GE ISTJE2
       *        ISTJE2GC ISTJE2
****************************** END OF DB2 DATA ******************************
```

Figure 47. Volumes Panel (ADB21V)

The fields on this panel are:

SELECT
Input field where you enter one of the line commands listed on the panel.

VOLUME
Serial number of the volume.

SG NAME
Name of the storage group.

SG OWNER
Authorization ID of the owner of the storage group.

Storage Groups Panel

This panel (Figure 48) appears when you select option G on the DB2 System Catalog panel.

Use this panel to display the storage groups in the DB2 catalog.

```
DB2 Admin ----------------- DB2X Storage Groups -------------  ROW 1 TO 4 OF 4
Command ===>                                                 Scroll ===> PAGE

Valid line commands are:
 D - Databases  S - Table spaces  X - Indexes  VOL - Volumes  I - Interpret
 GR - Grant  DROP - Drop  CRE - Create  AL - Alter  UT - Utility  A - Auth

                                                 SP
Select Name     Owner    VCAT           Space Date
       *        *        *       *           *
------ -------- -------- -------- ----------- -----
       G        ISTJE2   DB2X              96 95040
       ISTJE2G  ISTJE2   DB2X               0
       ISTJE2GC ISTJE2   DB2X               0
       ISTJE2GE ISTJE2   DB2X            7720 91295
****************************** END OF DB2 DATA *******************************
```

Figure 48. Storage Groups Panel (ADB21G)

The fields on this panel are:

SELECT
Input field where you enter one of the line commands listed on the panel.

NAME
Name of the storage group.

OWNER
Authorization ID of the owner of the storage group.

VCAT
Name of the VSAM catalog.

SPACE
Kilobytes (KB) of storage allocated for the storage group as determined by the STOSPACE utility the last time it was run.

SP DATE
Date when the SPACE field (see above) was last updated, in the form YYDDD.

Databases Panel

This panel (Figure 49) appears when you select option D on the DB2 System Catalog panel.

Use this panel to display the databases in the DB2 catalog.

Note that from this panel you can reverse engineer DB2 objects, as described in Chapter 7, “Reverse Engineering Panels” on page 143.

```
DB2 Admin ------------------- DB2X Databases ---------------------- Row 1 of 15
Command ===>                                                    Scroll ===> PAGE

Valid line commands are:
 T - Tables  S - Table spaces  X - Indexes  G - Storage group  ICS - IC status
 DIS - Display database  STA - Start database  STO - Stop database  A - Auth
 ? - Show all line commands
                         Storage  Buffer          Created      Index
Select Name     Owner    Group    Pool       DBID By       T E Buffer Pool
       *        *        *        *        *      *        * * *
------ -------- -------- -------- -------- ------ -------- - - -----------
       DSNDB04  SYSIBM   SYSDEFLT BP1           4 SYSIBM       BP2
       DSNDB06  SYSIBM                          6 SYSIBM     E BP0
       DSNDB07  DSCGDB2  SYSDEFLT BP1           7 ISTJE    W   BP2
       DSNRLST  DSCGDB2  SYSDEFLT BP1         256 ISTJE      E BP2
       DSNRGFDB DSCGDB2  SYSDEFLT BP1         257 ISTJE      E BP2
       DSN8D61A DSCGDB2  DSN8G610 BP1         258 ISTJE      E BP2
       DSN8D61P DSCGDB2  DSN8G610 BP1         259 ISTJE      E BP2
       DSN8D61U DSCGDB2  DSN8G61U BP1         260 ISTJE      E BP2
       DSN8D61L DSCGDB2  DSN8G610 BP1         261 ISTJE      E BP2
       ISTJED   ISTJE    ISTJEG   BP1         262 ISTJE      E BP2
       DSCGDB2D DSCGDB2  DSCGDB2G BP1         263 ISTJE      E BP2
```

Figure 49. Databases Panel (ADB21D)

The fields on this panel are:

SELECT
Input field where you enter one of the line commands listed on the panel.

NAME
Name of the database.

OWNER
Authorization ID of the owner of the database.

STORAGE GROUP
Name of the storage group for the database. For system databases, this field is blank.

BUFFER POOL
Name of the default buffer pool for the database. For system databases, this field is blank.

DBID
Internal ID for the database.

CREATED BY
Primary authorization ID of the user who created the database.

T
Type of database, which will be W for work file.

E
Type of encoding, which is one of the following:

E	EBCDIC
A	ASCII

INDEX BUFFER POOL
Name of the default buffer pool for indexes.

Table Spaces Panel

This panel (Figure 50) appears when you select option S on the DB2 System Catalog panel.

Use this panel to display the table spaces in the DB2 catalog.

From the Table Spaces panel, you can issue the UTL line command or primary command to generate JCL for the utilities that can be run against a table space. This function is shown at the end of this subsection.

You can also reverse engineer DB2 objects from this panel, as described in Chapter 7, “Reverse Engineering Panels” on page 143.

```
DB2 Admin ------------------ DB2X Table Spaces ------------------- Row 1 of 54
Command ===>                                                  Scroll ===> PAGE

Valid line commands are:
 T -Tables  D - Database  A - Auth  G - Storage group  ICS - Image copy status
 DIS - Display database  STA - Start database  STO - Stop database
 ? - Show all line commands

Select Name     Owner    DB Name  BP   L E S I C Ntable    N Active Segsz  T L
       *        *        *        *    * * * * * *      *           *      * *
------ -------- -------- -------- ---- - - - - - ------ ---------- ------ - -
       EEETABSP DPGROTH  DBGROTH  BP1  A N A N Y      4           0     32   Y
       TSGROTH  DPGROTH  DBGROTH  BP1  A N T N Y      0           0     32   Y
       DSCGDB2S DSCGDB2  DSCGDB2D BP1  A N A N Y      1           0      4   Y
       DSNRFUNC DPGROTH  DSNDB04  BP1  A N A Y Y      1           0      0   Y
       DSNRSTAT DPGROTH  DSNDB04  BP1  A N A Y Y      1           0      0   Y
       ISTJESL  ISTJE    DSNDB04  BP1  A N T N Y      0           0      0 O N
       OBJECTRD DPGROTH  DSNDB04  BP1  A N A Y Y      1           0      0   Y
       OBJE1Z4D DPGROTH  DSNDB04  BP1  A N A Y Y      1           0      0   Y
       PLANRTAB DPGROTH  DSNDB04  BP1  A N A Y Y      1           0      0   Y
       STAFF    DSN861SA DSNDB04  BP1  A N A Y Y      1           0      0   Y
       TESTRKR  ISTJE    DSNDB04  BP1  A N A Y Y      1          12      0   Y
```

Figure 50. Table Spaces Panel (ADB21S)

The fields on this panel are:

SELECT
Input field where you enter one of the line commands listed on the panel.

NAME
Name of the table space.

OWNER
Authorization ID of the owner of the table space.

DB NAME
Name of the database.

BP
Name of the buffer pool used for the table space.

L
Locking size, which is one of the following:

A Any
P Page

S Table space
T Table
R Row

E
Erase rule, which is one of the following:

Y Erase
N No erase

S
Status of the table space, which is one of the following:

A Available
N Not available

I
Implicit (whether the table space was created implicitly), which is one of the following:

Y Yes
N No

C
Close rule, which is one of the following:

Y Yes
N No

NTABLE
Number of tables defined in the table space.

N ACTIVE
Number of active pages in the table space. This field is 0 if the RUNSTATS utility has not been run.

SEGSZ
Number of pages in each segment of a segmented table space. The value is 0 if the table space is not segmented.

T
Type of table space, which is one of the following:

Blank Normal
I Defined with MEMBER CLUSTER and is not greater than 64 GB
K Defined with MEMBER CLUSTER and can be greater than 64 GB
L Defined as LARGE and can be greater than 64 GB
O Defined as an LOB (large object) table space

L
Log changes, which are one of the following:

Y Yes
N No

Table Space Utilities Panel

This panel (Figure 51) appears when you issue line command or primary command UTL (utilities) on the Table Spaces panel.

Use this panel to generate JCL for the utilities that can be run against table spaces. When the JCL is generated, DB2 Admin invokes ISPF edit, which lets you change the JCL, submit it, and copy it to another data set.

Option BP lets you change the default JOB statements.

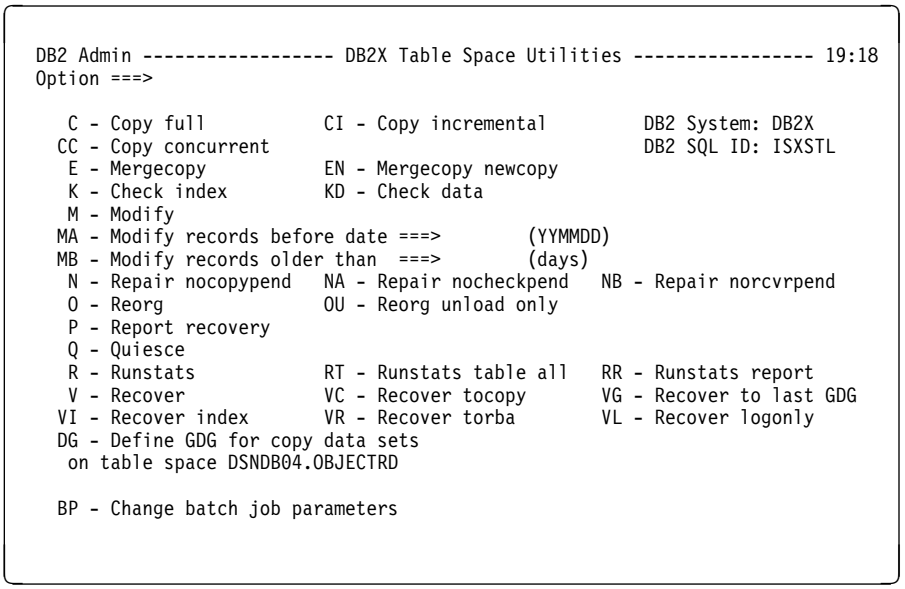


Figure 51. Table Space Utilities Panel (ADB2US)

Edit Generated JCL Panel

Figure 52 shows the type of output DB2 Admin returns when you generate JCL from the Table Space Utilities panel. In this case, option C on the Table Space Utilities panel was chosen (the COPY utility with the FULL parameter specified).

Use the Edit Generated JCL panel to edit the JCL you have generated.

```
 DB2 Admin ---------------- Edit Generated JCL --------------- Columns 001 072
 Command ===>                                                  Scroll ===> HALF

0000007 //*************************************************************************
0000008 //*
0000009 //* DB2 ADMIN GENERATED JOB TO RUN COPY ON SELECTED TABLESPACES
0000010 //*
0000011 //*************************************************************************
0000012 //*
0000013 //*************************************************************************
0000014 //* STEP COPY: COPY TABLESPACE CBED0001.CBES0001
0000015 //*************************************************************************
0000016 //COPY EXEC DSNUPROC,SYSTEM=DB2X,UID=ISTJE
0000017 //DSNUPROC.SYSCOPY DD DSN=ISTJE.DB2X.IC.CBED0001.CBES0001(+1),
0000018 //             DISP=(NEW,CATLG),
0000019 //             SPACE=(TRK,(30,30),RLSE),
0000020 //             UNIT=SYSDA
0000021 //DSNUPROC.SYSIN  DD  *
0000022 COPY TABLESPACE CBED0001.CBES0001 DSNUM ALL FULL YES
0000023 /*
0000024 //*************************************************************************
0000025 //* STEP MOD: MODIFY RECOVERY TABLESPACE CBED0001.CBES0001
0000026 //*************************************************************************
0000027 //MOD EXEC DSNUPROC,SYSTEM=DB2X,UID=ISXSTL
0000028 //DSNUPROC.SYSIN  DD  *
0000029 MODIFY RECOVERY TABLESPACE CBED0001.CBES0001 DSNUM ALL
0000030   DELETE AGE(35)
0000031 /*
******* ***************************** BOTTOM OF DATA ****************************
```

Figure 52. Edit Generated JCL Panel (COPY Utility) (ADB2UE)

Batch Job Utility Parameters Panel

Figure 53 shows the type of output DB2 Admin returns when you choose option BP on the Table Space Utilities panel.

On this panel, you can change the job statement and other default parameters.

The last line of the job statement must end with a comma. This is because DB2 Admin adds an additional line to the job statement for the installation-specified CLASS that is to be used for the utility. DB2 Admin also adds the JOBPARM that is to be used, if any.

DB2 Admin uses the following defaults when generating utility JCL:

- Default unit name when allocating new data sets
- Default space parameters for allocating copy data sets and unload data sets if the RUNSTATS or STOSPACE utilities have not been run

```
DB2 Admin -------------- DB2X Batch Job Utility Parameters -------------- 19:10
Command ===>

                                                          DB2 System: DB2X
Job cards:                                                DB2 SQL ID: ISXSTL
  ===> //ISXSTLD JOB (ACCOUNTING INFO),'DB2 UTILITY',
  ===> //         REGION=XXXXK,NOTIFY=ISXSTL,
  ===> //         MSGCLASS=X,
       Do not specify CLASS and JOBPARM. DB2 Admin will generate them.

Default unit name to be used:
  Unit name       ===> SYSDA

Default space allocation for copy and unload data sets, if RUNSTATS/STOSPACE
has not been run:
  Space unit      ===> TRK      (BLK, TRK, CYL or 4096-32760)
  Primary alloc   ===> 30       (in above units)
  Secondary alloc ===> 30       (in above units)
```

Figure 53. Batch Job Utility Parameters Panel (ADB2UPA)

Tables, Views, and Aliases Panel

This panel (Figure 54) appears when you select option T on the DB2 System Catalog panel.

Use this panel to display the tables, views, and aliases in the DB2 catalog.

From the Tables, Views, and Aliases panel, you can issue the UTL line command to generate JCL for the utilities that can be run against a table. You can also issue the VS line command to show how a view was created. These functions are shown at the end of this subsection.

| In addition, you can reverse engineer DB2 objects from this panel, as described in
| Chapter 7, “Reverse Engineering Panels” on page 143.

```
DB2 Admin ----------- DB2X Tables, Views, and Aliases ----  ROW 1 TO 13 OF 260
Command ===>                                                 Scroll ===> PAGE

Valid line commands are:
 C - Columns  A - Auth  L - List  X - Indexes  S - Table space  D - Database
 V - Views  T - Tables  P - Plans  Y - Synonyms  SEL - Select prototyping
 ? - Show all line commands

Sel   Name               Owner    T DB Name  TS Name    Cols        Rows Checks
      *                  *        * *        *        *      *           *
----- ------------------ -------- - -------- -------- ------ ----------- ------
      VASTRDE1           DSN8610  V DSNDB06  SYSVIEWS     13          -1      0
      DEPT               DSN8610  T DSN8D61A DSN8S61D      5          14      0
      VDEPT              DSN8610  V DSN8D61A DSN8S61D      4          -1      0
      VHDEPT             DSN8610  V DSN8D61A DSN8S61D      5          -1      0
      EMP                DSN8610  T DSN8D61A DSN8S61E     14          32      2
      TCONA              DSN8610  T DSN8D61P DSN8S61C      5           0      0
      VCONA              DSN8610  V DSN8D61P DSN8S61C      5          -1      0
      TOPTVAL            DSN8610  T DSN8D61P DSN8S61C     11         160      0
      MAP_TBL            DSN8610  T DSN8D61P DSN8S61Q      4          -1      0
      EDEPT              DSN8610  T DSN8D61A DSN8S61R      7          -1      0
      EEMP               DSN8610  T DSN8D61A DSN8S61R     16          -1      0
      PROJ               DSN8610  T DSN8D61A DSN8S61P      8          20      0
      VPROJ              DSN8610  V DSN8D61A DSN8S61P      8          -1      0
      PARTS              DSN8610  T DSN8D61A DSN8S61S      4          -1      0
      VDEPMG1            DSN8610  V DSN8D61A DSN8S61D      7          -1      0
      VEMP               DSN8610  V DSN8D61A DSN8S61E      5          -1      0
      VEMPDPT1           DSN8610  V DSN8D61A DSN8S61E      7          -1      0
      VASTRDE2           DSN8610  V DSN8D61A DSN8S61E     13          -1      0
      ACT                DSN8610  T DSN8D61A DSN8S61P      3          18      0
```

Figure 54. Tables, Views, and Aliases Panel (ADB21T)

The fields on this panel are:

SELECT
Input field where you enter one of the line commands listed on the panel.

NAME
Name of the table, view, or alias.

OWNER
Authorization ID of the owner of the table, view, or alias.

T
Type of object, which is one of the following:

T Table

V View
A Alias

DB NAME
For a table or a view of tables, the name of the database that contains the table space named in TS NAME (see below). For a view of a view or for an alias, this field contains DSNDB06.

TS NAME
For a table or a view of one table, the name of the table space that contains one of the tables. For a view of a view, this field contains SYSVIEWS. For an alias, this field contains SYSDBAUT.

COLS
Number of columns in the table or view.

ROWS
Total number of rows in the table. This field is -1 if the RUNSTATS utility has not been run or if the rows describe a view or an alias.

CHECKS
Number of check constraints defined on the table.

Table Utilities Panel

This panel (Figure 55) appears when you issue line command or primary command UTL (utilities) on the Tables, Views, and Aliases panel.

Use this panel to generate JCL for the utilities that can be run against tables. When the JCL is generated, DB2 Admin invokes ISPF edit, which lets you change the JCL, submit it, and copy it to another data set.

Option BP lets you change the default JOB statements (as shown in Figure 53 on page 71).

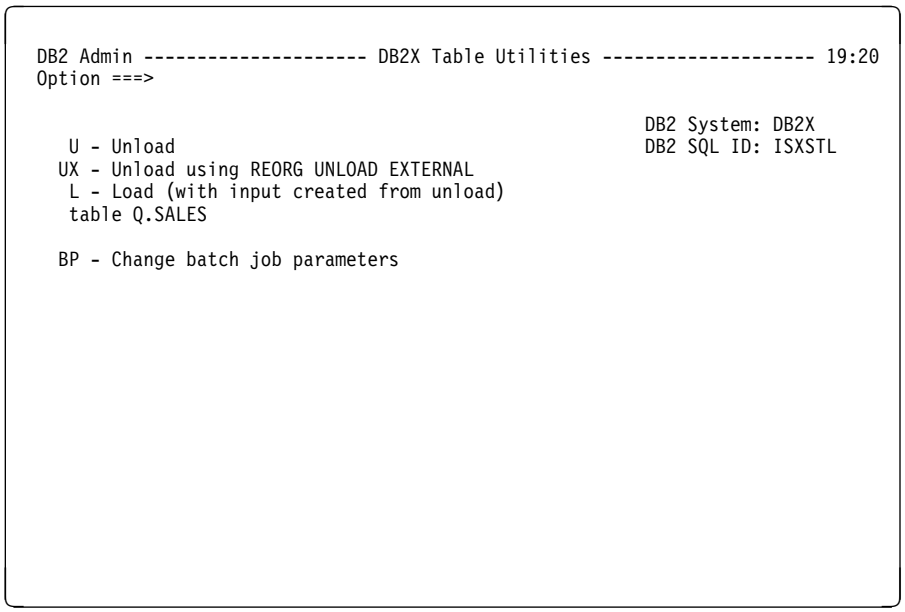


Figure 55. Table Utilities Panel (ADB2UT)

Edit Generated JCL Panel

Figure 56 shows the type of output DB2 Admin returns when you generate JCL from the Table Utilities panel. In this case, option U on the Table Utilities panel was chosen (the UNLOAD utility).

Use the Edit Generated JCL panel to edit the JCL you have generated.

```
 DB2 Admin ---------------- Edit Generated JCL --------------- Columns 001 072
 Command ===>                                                  Scroll ===> HALF

0000022 //*********************************************************************
0000023 //* STEP UNLOAD: UNLOAD TABLES
0000024 //*********************************************************************
0000025 //UNLOAD EXEC PGM=IKJEFT01,DYNAMNBR=100
0000026 //STEPLIB   DD DSN=SYS1.DB2X.RUNLIB.LOAD,DISP=SHR
0000027 //SYSTSPRT  DD SYSOUT=*
0000028 //SYSPRINT  DD SYSOUT=*
0000029 //SYSUDUMP  DD SYSOUT=*
0000030 //SYSTSIN   DD *
0000031  DSN SYSTEM(DB2X)
0000032  RUN  PROGRAM(DSNTIAUL) PLAN(DSNTIAUL)
0000033  END
0000034 //SYSPUNCH DD DSN=DSCGDB2.DB2X.UNLOAD.CONTROL,
0000035 //         SPACE=(TRK,(5,5),RLSE),UNIT=SYSDA,DISP=(,CATLG,DELETE)
0000036 //SYSREC00  DD DSN=DSCGDB2.DB2X.UNLOAD.SALES,
0000037 //             DCB=(BLKSIZE=8192),
0000038 //             SPACE=(TRK,(30,30),RLSE),
0000039 //             UNIT=SYSDA,DISP=(,CATLG,DELETE)
0000040 //SYSIN  DD  *
0000041   "Q"."SALES"
```

Figure 56. Edit Generated JCL Panel (UNLOAD Utility) (ADB2UE)

Create View Source Statements Panel

This panel (Figure 57) appears when you issue line command VS (show view) against a table on the Tables, Views, and Aliases panel.

Use this panel to see how a view was created.

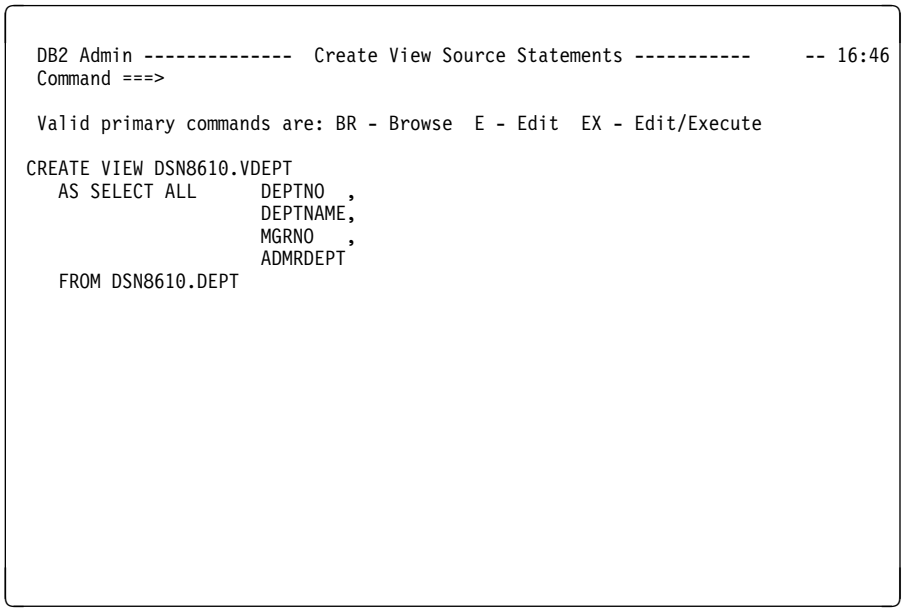


Figure 57. Create View Source Statements Panel (ADB21VS)

Indexes Panel

This panel (Figure 58) appears when you select option X on the DB2 System Catalog panel.

Use this panel to display the indexes in the DB2 catalog.

Note that from the Indexes panel, you can issue the UTL line command or primary command to generate JCL for the utilities that can be run against an index. This function is shown at the end of this subsection.

```
DB2 Admin ---------------------- DB2X Indexes -------------------- Row 1 of 131
Command ===>                                                 Scroll ===> PAGE

Valid line commands are:
 T - Tables  D - Database  G - Storage group  P - Plans  C - Columns
 DIS - Display database  STA - Start database  STO - Stop database
 ? - Show all line commands

                         Index                       Table             C C C
Select Index Name        Owner    Table Name         Owner    U   Cols G D L T
       *                 *        *                  *        * *      * * * *
------ ----------------- -------- ------------------ -------- - ------ - - - -
       XEMP1             DSN8610  EMP                DSN8610  P      1 Y Y N 2
       XEMP2             DSN8610  EMP                DSN8610  D      1 N N N 2
****************************** END OF DB2 DATA *******************************
```

Figure 58. Indexes Panel (ADB21X)

The fields on this panel are:

SELECT
Input field where you enter one of the line commands listed on the panel.

INDEX NAME
Name of the index.

INDEX OWNER
Authorization ID of the owner of the index.

TABLE NAME
Name of the table on which the index is defined.

TABLE OWNER
Authorization ID of the owner of the table.

U
Unique rule, which is one of the following:

U	Yes
D	No
P	Primary index

COLS
Number of columns in the key.

CG

Whether CLUSTER was specified when the index was created. This field contains one of the following:

Y Yes
N No

CD

Whether the table is clustered by the index. This field contains one of the following:

N No, which means that 95 percent of the rows, or fewer, are in clustering order.

Y Yes, which means that more than 95 percent of the rows are in clustering order.

The entry in this field can be changed by the RUNSTATS utility.

CL

Whether the data sets are closed when the index is not in use. This field contains one of the following:

Y Yes
N No

T

Type of index. This field contains one of the following:

Y Yes
N No

Index Utilities Panel

This panel (Figure 59) appears when you issue line command or primary command UTL (utilities) on the Indexes panel.

Use this panel to generate JCL for the utilities that can be run against indexes. When the JCL is generated, DB2 Admin invokes ISPF edit, which lets you change the JCL, submit it, and copy it to another data set.

Option BP lets you change the default JOB statements (as shown in Figure 53 on page 71).

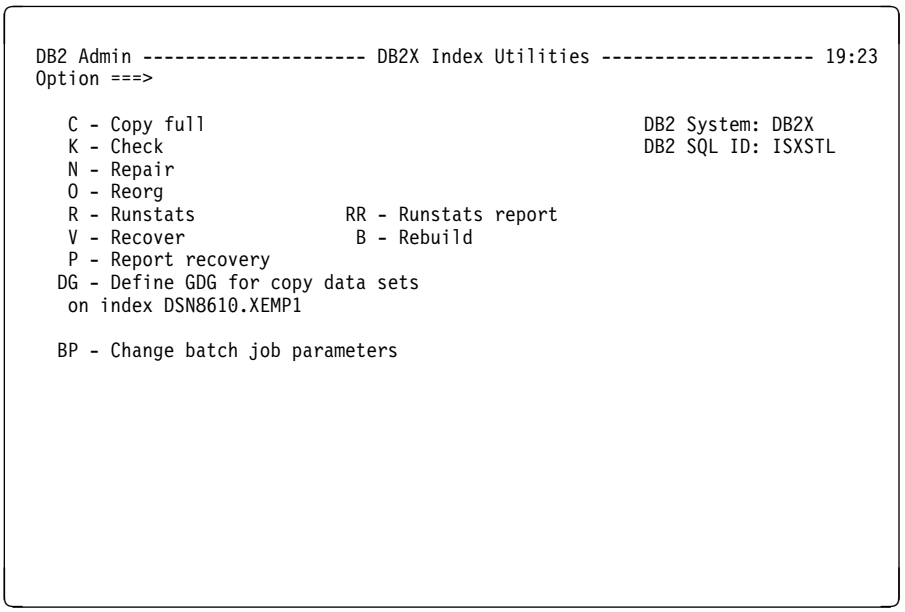


Figure 59. Index Utilities Panel (ADB2UX)

Edit Generated JCL Panel

Figure 60 shows the type of output DB2 Admin returns when you generate JCL from the Index Utilities panel. In this case, option R on the Index Utilities panel was chosen (the RUNSTATS utility).

Use the Edit Generated JCL panel to edit the JCL you have generated.

```
 DB2 Admin ---------------- Edit Generated JCL --------------- Columns 001 072
 Command ===>                                                  Scroll ===> HALF

******* ***************************** TOP OF DATA ****************************
0000001 //ISTJED JOB (ADB,IS6),'DB2 UTILITY',
0000002 //         REGION=6M,NOTIFY=ISTJE,
0000003 //         MSGCLASS=H,
0000004 //         CLASS=9
0000005 //*
0000006 //*********************************************************************
0000007 //*
0000008 //* DB2 ADMIN GENERATED JOB TO RUN RUNSTATS ON INDEXES
0000009 //*
0000010 //*********************************************************************
0000011 //*
0000012 //*********************************************************************
0000013 //* STEP RUNSTATS: RUNSTATS ON INDEXES
0000014 //*********************************************************************
0000015 //RUNSTATS EXEC DSNUPROC,SYSTEM=DB2X,UID=ISTJE
0000016 //DSNUPROC.SYSIN  DD  *
0000017 RUNSTATS INDEX("DSN8610"."XEMP1")
******* ***************************** BOTTOM OF DATA *************************
```

Figure 60. Edit Generated JCL Panel (RUNSTATS Utility) (ADB2UE)

Columns Panel

This panel (Figure 61) appears when you select option C on the DB2 System Catalog panel.

Use this panel to display the columns in all tables in the DB2 catalog.

```
DB2 Admin ---------------------- DB2X Columns -----------  ROW 1 TO 13 OF 1,000
Command ===>                                                 Scroll ===> PAGE
Max no of rows reached
Valid line commands are:
 T - Tables  X - Indexes  A - Auth  GR - Grant  H - Homonyms  I - Interpret
 UR - Update runstats  LAB - Label  COM - Comment  DI - Distribution stats
 PST - Partition stats

S   Owner    Name               Column Name        Col No Col Type Length N D F
    *        *                  *                  *      *        *      * * *
--- -------- ------------------ ------------------ ------ -------- ------ - - -
    DSN8610  ACT                ACTNO                   1 SMALLINT      2 N N N
    DSN8610  ACT                ACTKWD                  2 CHAR          6 N N N
    DSN8610  ACT                ACTDESC                 3 VARCHAR      20 N N N
    DSN8610  AUX_BMP_PHOTO      AUXID                   1 VARCHAR      17 N B N
    DSN8610  AUX_BMP_PHOTO      AUXVER                  2 SMALLINT      2 N B N
    DSN8610  AUX_BMP_PHOTO      AUXVALUE                3 BLOB          4 Y Y N
    DSN8610  AUX_EMP_RESUME     AUXID                   1 VARCHAR      17 N B N
    DSN8610  AUX_EMP_RESUME     AUXVER                  2 SMALLINT      2 N B N
    DSN8610  AUX_EMP_RESUME     AUXVALUE                3 CLOB          4 Y Y N
    DSN8610  AUX_PSEG_PHOTO     AUXID                   1 VARCHAR      17 N B N
    DSN8610  AUX_PSEG_PHOTO     AUXVER                  2 SMALLINT      2 N B N
    DSN8610  AUX_PSEG_PHOTO     AUXVALUE                3 BLOB          4 Y Y N
    DSN8610  DEPT               DEPTNO                  1 CHAR          3 N N N
    DSN8610  DEPT               DEPTNAME                2 VARCHAR      36 N N N
    DSN8610  DEPT               MGRNO                   3 CHAR          6 Y Y N
    DSN8610  DEPT               ADMRDEPT                4 CHAR          3 N N N
    DSN8610  DEPT               LOCATION                5 CHAR         16 Y Y N
    DSN8610  EACT               ACTNO                   1 SMALLINT      2 N N N
    DSN8610  EACT               ACTKWD                  2 CHAR          6 N N N
    DSN8610  EACT               ACTDESC                 3 VARCHAR      20 N N N
```

Figure 61. Columns Panel (ADB21C)

The fields on this panel are:

S
Input field where you enter one of the line commands listed on the panel.

OWNER
Authorization ID of the owner of the table or view that contains the column.

NAME
Name of the table or view that contains the column.

COLUMN NAME
Name of the column.

COL NO
Numerical position of the column in the table or view.

COL TYPE
Type of column, which is one of the following:

INTEGER	Large integer
SMALLINT	Small integer
FLOAT	Floating-point

CHAR	Fixed-length character string
VARCHAR	Varying-length character string
LONGVAR	Varying-length character string
DECIMAL	Decimal
GRAPHIC	Fixed-length graphic string
VARG	Varying-length graphic string
LONGVARG	Varying-length graphic string
DATE	Date
TIME	Time
TIMESTMP	Timestamp

LENGTH

Length attribute of the column or, in the case of a decimal column, its precision. The number does not include internal prefixes to record actual length and null state (where these are applicable).

N

Whether the column can contain null values. This field contains one of the following:

Y	Yes
N	No

D

Default value for the column This field contains one of the following:

N	None
Y	Yes
B	Yes
1-4	User-defined defaults
S	SQLID
U	USER

F

Whether the column has a field procedure. This field contains one of the following:

Y	Yes
N	No

Synonyms Panel

This panel (Figure 62) appears when you select option Y on the DB2 System Catalog panel.

Use this panel to display the synonyms in the DB2 catalog.

```
DB2 Admin -------------------- DB2X Synonyms --------------  ROW 8 TO 29 OF 36
Command ===>                                                  Scroll ===> PAGE

Valid line commands are:
 T - Table  CRE - Create synonym  DROP - Drop synonym  I - Interpretation
 CREAL - Create alias

Select  Synonym            Owner    Table/View Name    Owner         Created By
        *                  *        *                  *             *
------- ------------------ -------- ------------------ ------------- --------
        VASTRDE1           DSCGDB2  VASTRDE1           DSN8610       ISTJE
        EMP                DSCGDB2  EMP                DSN8610       ISTJE
        VPHONE             DSCGDB2  VPHONE             DSN8610       ISTJE
        TCONA              DSCGDB2  TCONA              DSN8610       ISTJE
        DEPT               DSCGDB2  DEPT               DSN8610       ISTJE
        VDEPT              DSCGDB2  VDEPT              DSN8610       ISTJE
        VHDEPT             DSCGDB2  VHDEPT             DSN8610       ISTJE
        VDEPMG1            DSCGDB2  VDEPMG1            DSN8610       ISTJE
        TDSPTXT            DSCGDB2  TDSPTXT            DSN8610       ISTJE
        TOPTVAL            DSCGDB2  TOPTVAL            DSN8610       ISTJE
        VCONA              DSCGDB2  VCONA              DSN8610       ISTJE
        VDSPTXT            DSCGDB2  VDSPTXT            DSN8610       ISTJE
        VOPTVAL            DSCGDB2  VOPTVAL            DSN8610       ISTJE
        VPSTRDE1           DSCGDB2  VPSTRDE1           DSN8610       ISTJE
        VPSTRDE2           DSCGDB2  VPSTRDE2           DSN8610       ISTJE
        VEMPPROJACT        DSCGDB2  VEMPPROJACT        DSN8610       ISTJE
        VPROJRE1           DSCGDB2  VPROJRE1           DSN8610       ISTJE
        PROJ               DSCGDB2  PROJ               DSN8610       ISTJE
        VPROJ              DSCGDB2  VPROJ              DSN8610       ISTJE
        VFORPLA            DSCGDB2  VFORPLA            DSN8610       ISTJE
        VSTAFAC1           DSCGDB2  VSTAFAC1           DSN8610       ISTJE
```

Figure 62. Synonyms Panel (ADB21Y)

The fields on this panel are:

SELECT
Input field where you enter one of the line commands listed on the panel.

SYNONYM
Synonym for the table or view.

OWNER
Authorization ID of the owner of the synonym.

TABLE/VIEW NAME
Name of the table or view.

OWNER
Authorization ID of the owner of the table or view.

CREATED BY
Primary authorization ID of the user who created the synonym.

Application Plans Panel

This panel (Figure 63) appears when you select option P on the DB2 System Catalog panel.

Use this panel to display the application plans in the DB2 catalog.

Note that from the Application Plans panel, you can issue line commands to bind, rebind, and free an application plan. These functions are shown at the end of this subsection. You can also issue the SQ line command to show the SQL statements. The result of this operation is the same as that shown in Figure 75 on page 100.

```
DB2 Admin ---------------- DB2X Application Plans ---------  ROW 1 TO 12 OF 34
Command ===>                                                  Scroll ===> PAGE

Valid line commands are:
 DEP - Depend  A - Auth  T - Tables  V - Views  X - Indexes  S - Table spaces
 Y - Synonyms  M - DBRMs  RB - Rebind  F - Free  B - Bind  GR - Grant
 PL - Package list  LP - List PLAN_TABLE  I - Interpret  ENDI - Enab/disab con
 K - Local packages  SQ - SQL
                         Bind   Bind   V I V O Bound    Quali-     Pack A R E D
Select Name     Owner    Date   Time   D S A P By       fier      Lists Q L X R
       *        *        *      *      * * * * *        *        *      * * * *
------ -------- -------- ------ ------ - - - - -------- -------- ------ - - - -
       DSNTIA61 DSCGDB2  990115 112136 R S Y Y ISTJE    DSCGDB2       0 U C N
       DSNTIAD  DSCGDB2  990115 112136 R S Y Y ISTJE    DSCGDB2       0 U C N
       DSNESPCS DSCGDB2  990115 113024 R S Y Y ISTJE    DSCGDB2       1 U C N
       DSNESPRR DSCGDB2  990115 113025 R R Y Y ISTJE    DSCGDB2       1 U C N
       DSNEDCL  DSCGDB2  990115 113026 R S Y Y ISTJE    DSCGDB2       1 U C N
       DSNHYCRD DSCGDB2  990115 113032 R S Y Y ISTJE    DSCGDB2       1 U C N
       DSNWZP   DSCGDB2  990115 113033 R S Y Y ISTJE    DSCGDB2       1 U C N
       DSNTEP61 DSCGDB2  990115 134750 R S Y Y ISTJE    DSCGDB2       1 U C N
       DSNTEP2  DSCGDB2  990115 134750 R S Y Y ISTJE    DSCGDB2       1 U C N
       ADB2RE   DSCGDB2  990126 164907 B S Y Y ISTFL    DSCGDB2       1 U C Y
       ADB      DSCGDB2  990115 140319 B S Y Y ISTJE    DSCGDB2       1 U C N
       DSNTIB61 DSCGDB2  990115 141322 R S Y Y ISTJE    DSCGDB2       0 U C N
       DSNTIAUL DSCGDB2  990115 141322 R S Y Y ISTJE    DSCGDB2       0 U C N
       DSN8BH61 DSCGDB2  990115 142711 R S Y Y ISTJE    DSCGDB2       0 U C N
       DSN8EP1  DSCGDB2  990115 144050 R S Y Y ISTJE    DSCGDB2       1 U C N
       DSN8LL61 DSCGDB2  990115 150935 R S Y Y ISTJE    DSCGDB2       1 U C N
       DSN8LC61 DSCGDB2  990115 150936 R S Y Y ISTJE    DSCGDB2       1 U C N
       DSN8LR61 DSCGDB2  990115 151242 R S Y Y ISTJE    DSCGDB2       1 U C N
       DSNESPCS DSCGDB2  951218 165717 R S Y Y ISTJE    DSCGDB2       1 U C N
       DSNESPCS DSCGDB2  951218 165717 R S Y Y ISTJE    DSCGDB2       1 U C N
```

Figure 63. Application Plans Panel (ADB21P)

The fields on this panel are:

SELECT
Input field where you enter one of the line commands listed on the panel.

NAME
Name of the application plan.

OWNER
Authorization ID of the owner of the application plan.

BIND DATE
Date of the most recent bind on the application plan. The date is in the form YYMMDD.

BIND TIME
Time of the most recent bind on the application plan. The time is in the form HHMMSSTH.

VD
Whether validity checking can be deferred until run time. This field contains one of the following:

B All validity checking must be done during the bind.

R Validity checking is done at run time for tables, views, and privileges that do not exist at bind time.

IS
Isolation level, which is one of the following:

R Repeatable read
S Cursor stability
U Uncomitted read

VA
Whether the application plan is valid, that is, whether it can be run without being rebound. This field contains one of the following:

Y Yes
N No

OP
Whether the application plan can be allocated. This field contains one of the following:

Y Yes
N No. Explicit BIND or REBIND is required before the plan can be allocated.

BOUND BY
Primary authorization ID of the binder of the plan.

QUALIFIER
Qualifier that was specified at bind time to resolve names.

PACK LISTS
Number of packages in the package list at bind time.

AQ
When resources for the application plan are acquired. This field contains one of the following:

A At allocation time
U At first use

RL
When resources for the application plan are released. This field contains one of the following:

C At commit time
U At deallocation time

EX

Whether the application plan was bound using EXPLAIN. This field contains one of the following:

Y	Yes
N	No

DR

Dynamic SQL rules. This field contains one of the following:

B	Use binder's authid and authorizations.
Blank	Use executor's authid and authorizations.

Bind Application Plan Panel

This panel (Figure 64) appears when you issue line command B (bind package) on the Application Plans panel.

Use this panel to build an application plan.

Enter your selection criteria on the panel. See DB2 documentation for an explanation of the BIND PLAN command and its parameters.

```
DB2 Admin ------------------ DB2X Bind Application Plan ----------------- 14:29
Command ===>

                                                                      More:     +
 Verify BIND parameters:

 BIND PLAN(
 Plan name       ===> DSNTIA61
 ) OWNER(
 Plan owner      ===> ISTJE2
 ) QUALIFIER(
 Qualifier       ===> ISTJE2   (qualifier to resolve unqualified SQL)
 ) MEMBER(                     (use ? to get current values from the catalog)
 DBRM members    ===> ?



 ) LIBRARY                     (use ? to get current values from the catalog)
 DBRM data sets  ===> ?



 ) PKLIST(                     (use ? to get current values from the catalog)
```

Figure 64. Bind Application Plan Panel (ADB21PB)

Rebind Application Plan Panel

This panel (Figure 65) appears when you issue line command R (rebind package) on the Application Plans panel.

Use this panel to rebind an application plan when changes have been made that affect the plan, but the SQL statements in the program have not changed.

Enter your selection criteria on the panel. See DB2 documentation for an explanation of the REBIND PLAN command and its parameters.

```
DB2 Admin ----------------- DB2X Rebind Application Plan ---------------- 14:29
Command ===>

                                                                    More:     +
 Verify REBIND parameters:

 REBIND PLAN(
 Plan name       ===> DSNTIA61
 ) OWNER(
 Plan owner      ===> DSCGDB2
 ) QUALIFIER(
 Qualifier       ===> DSCGDB2  (qualifier to resolve unqualified SQL)
 ) PKLIST(                     (use ? to get current values from the catalog)
 Package lists   ===>



 ) NOPKLIST
 No package list ===>          (Yes or No to remove current package list)
   DEFER(PREPARE)
 Defer prepare   ===> N        (Yes or No, used for distributed dynamic SQL)
 ) VALIDATE(
 Validation time ===> B        (Run or Bind, Bind preferred)
```

Figure 65. Rebind Application Plan Panel (ADB21PR)

Free Application Plan Panel

This panel (Figure 66) appears when you issue line command F (free package) on the Application Plans panel.

Use this panel to delete application plans from DB2.

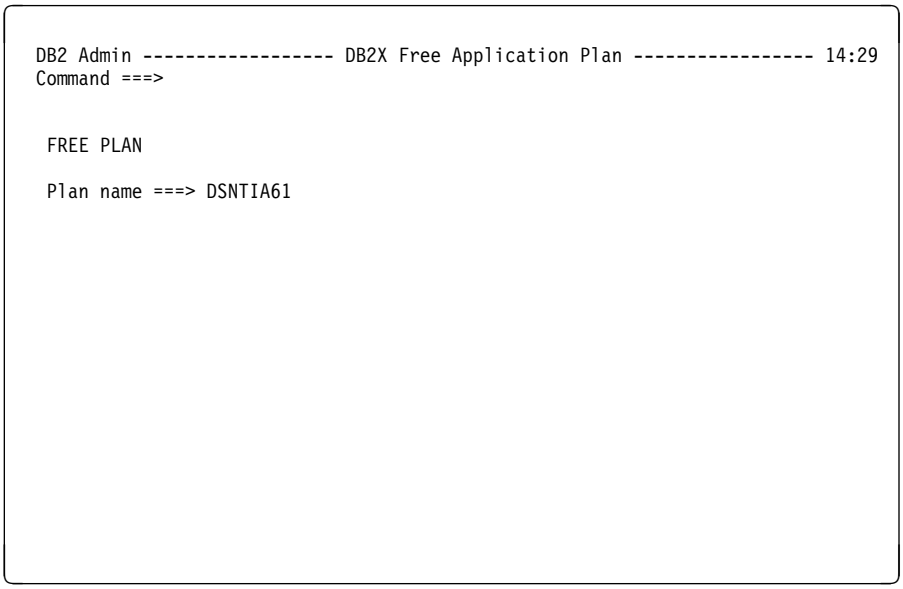


Figure 66. Free Application Plan Panel (ADB21PF)

Packages Panel

This panel (Figure 67) appears when you select option K on the DB2 System Catalog panel.

Use this panel to display the packages in the DB2 catalog.

Note that from the Packages panel, you can issue line commands to bind, rebind, and free a package. You can also issue the SQ line command to show the SQL statements. These functions are shown at the end of this subsection.

```
DB2 Admin ------------------- DB2X Packages ---------------  ROW 1 TO 12 OF 97
Command ===>                                                  Scroll ===> PAGE

Valid line commands are:
 DEP - Depend  A - Auth  T - Tables  V - Views  X - Indexes  S - Table spaces
 Y - Synonyms  RB - Rebind  F - Free  B - Bind  BC - Bind Copy   GR - Grant
 EN -Enab/disab con  PL - Package lists  P - Local plans  LP - List PLAN_TABLE
 I - Interpretation  SQ - SQL in package  VE - Versions
                                                      V I V O Quali-   R E D
Sel Collection        Name     Owner    Bind Timestamp   D S A P fier     L X R
    *                 *        *        *                * * * * *        * * *
--- ----------------- -------- -------- ---------------- - - - - -------- - - -
    DSNEDCL           DSNECP68 DSCGDB2  1999-01-15-11.30 R S Y Y DSCGDB2    N
    DSNESPCS          DSNESM68 DSCGDB2  1999-01-15-11.30 R S Y Y DSCGDB2    N
    DSNESPRR          DSNESM68 DSCGDB2  1999-01-15-11.30 R R Y Y DSCGDB2    N
    DSNHYCRD          DSNHYCRD DSCGDB2  1999-01-15-11.30 R S Y Y DSCGDB2    N
    DSNTEP2           DSN@EP2L DSCGDB2  1999-01-15-13.45 R S Y Y DSCGDB2    N
    DSNTEP2           DSNTEP2  DSCGDB2  1999-01-15-13.47 R S Y Y DSCGDB2    N
    DSNUTILS          DSNUTILS DSCGDB2  1999-01-15-11.30 B S Y Y DSCGDB2    N
    DSNWZP            DSNWZP   DSCGDB2  1999-01-15-11.30 B S Y Y DSCGDB2    N
    DSN8EP61          DSN8EP1  DSCGDB2  1999-01-15-14.40 R S Y Y DSCGDB2    N
    DSN8LC61          DSN8DLTC DSCGDB2  1999-01-15-15.09 R S Y Y DSN8610    N
    DSN8LL61          DSN8DLPL DSCGDB2  1999-01-15-15.09 R S Y Y DSN8610    N
    DSN8LP61          DSN8DLPV DSCGDB2  1999-01-15-15.15 R S Y Y DSN8610    N
    DSN8LR61          DSN8DLRV DSCGDB2  1999-01-15-15.12 R S Y Y DSN8610    N
    DSNEDCL           DSNECP68 DSCGDB2  1999-01-15-11.30 R S Y Y DSCGDB2    N
```

Figure 67. Packages Panel (ADB21K)

The fields on this panel are:

S
Input field where you enter one of the line commands listed on the panel.

COLLECTION
Name of the package collection.

NAME
Name of the package.

OWNER
Authorization ID of the package owner.

BIND TIMESTAMP
Timestamp indicating when the package was last bound.

VD

Whether validity checking can be deferred until run time. This field contains one of the following:

B All validity checking must be done during the bind.

R Validity checking is done at run time for tables, views, and privileges that do not exist at bind time.

IS

Isolation level, which is one of the following:

R Repeatable read
S Cursor stability

VA

Whether the package is valid, that is, whether it can be run without being rebound. This field contains one of the following:

Y Yes
N No

OP

Whether the package can be allocated. This field contains one of the following:

Y Yes.

N No. Explicit BIND or REBIND is required before the package can be allocated.

QUALIFIER

Qualifier that was specified at bind time to resolve names.

RL

When resources for the package are released. This field contains one of the following:

C At commit time
U At deallocation time
Blank The value specified for the plan is used.

EX

Whether the package was bound using EXPLAIN.

DR

Dynamic SQL rules. This field contains one of the following:

B Use binder's authid and authorizations.
R Use executor's authid and authorizations.
Blank Not specified. Use the dynamic rules of the plan.

Bind Package Panel

This panel (Figure 68) appears when you issue line command B (bind package) on the Packages panel.

Use this panel to build an application package.

Enter your selection criteria on the panel. See DB2 documentation for an explanation of the BIND PACKAGE command and its parameters.

```
DB2 Admin ---------------------- DB2X Bind Package ---------------------- 14:32
Command ===>

                                                                      More:     +
 Verify bind parameters:

 BIND PACKAGE(
 Location        ===>
 Collection      ===> ISTJE_COLC2
 ) OWNER(
 Package owner   ===> ISTJE
 ) QUALIFIER(
 Qualifier       ===> DSCGDB2
 ) LIBRARY(
 DBRM library    ===> 'ISTJE.DB2ADM.DBRM'

 ) MEMBER(
 Name            ===> DB2ASTM

 ) SQLERROR(
 SQL error action===> C        (Continue or Nopackage)
 ) VALIDATE(
 Validation time ===> B        (Run or Bind, Bind preferred)
```

Figure 68. Bind Package Panel (ADB21KB)

Rebind Package Panel

This panel (Figure 69) appears when you issue line command R (rebind package) on the Packages panel.

Use this panel to rebind an application package when changes have been made that affect the package, but the SQL statements in the program have not changed.

Enter your selection criteria on the panel. See DB2 documentation for an explanation of the REBIND PACKAGE command and its parameters.

```
DB2 Admin ---------------------- DB2X Rebind Package ---------------------- 01:41
Command ===>

                                                                        More:     +
 Verify REBIND parameters:

 REBIND PACKAGE(
 Location        ===>
 Collection      ===> NULLID
 Package         ===> SQLAB4D0
 (
 Version         ===>

 )) OWNER(
 Package Owner   ===> ISTJE
 ) QUALIFIER(
 Qualifier       ===> ISTJE
 ) VALIDATE(
 Validation time ===> R        (Run or Bind, Bind preferred)
 ) ISOLATION(
 Isolation level ===> C        (Cs, Rr, or Ur)
 ) RELEASE(
```

Figure 69. Rebind Package Panel (ADB21KR)

Free Package Panel

This panel (Figure 70) appears when you issue line command F (free package) on the Packages panel.

Use this panel to delete a specific version of a package, all versions of a package, or whole collections of packages.

Enter your selection criteria on the panel. See DB2 documentation for an explanation of the FREE PACKAGE command and its parameters.

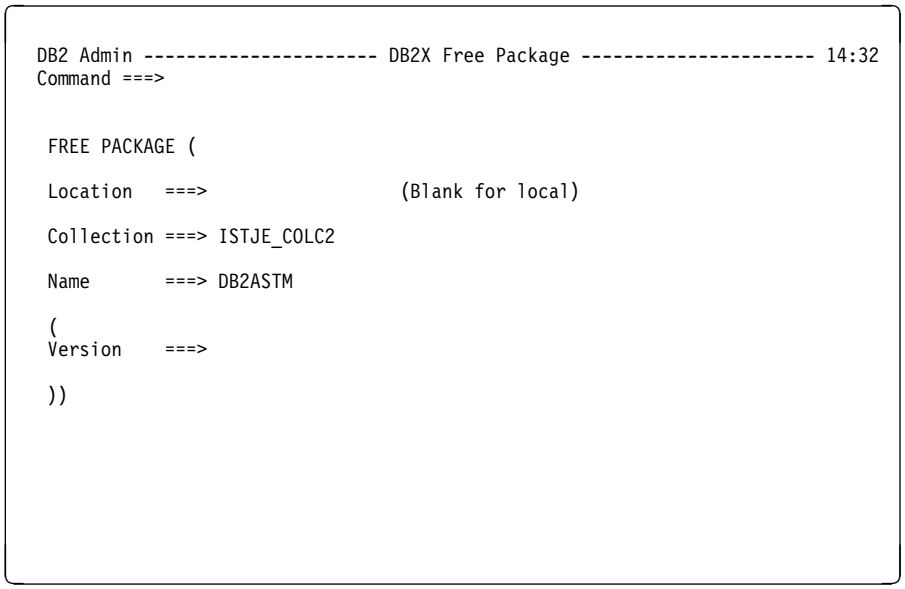


Figure 70. Free Package Panel (ADB21KF)

Extracted SQL Panel

This panel (Figure 71) appears when you issue line command SQ (show SQL) on the Packages panel.

Use this panel to see the SQL statements in a package.

```
 DB2 Admin ------------------ Extracted SQL ------------------ Columns 001 072
 Command ===>                                                 Scroll ===> HALF

******* ***************************** TOP OF DATA ******************************
0000001 -- SQL statements in PACKAGE : ISTJE_COLC2.DB2ASTM.()
0000002 -- SQL in stmt: 56
0000003 DECLARE SYSIBM.SYSSTMT TABLE (NAME CHAR (8) NOT NULL, PLNAME CHAR (8)
0000004 NOT NULL, PLCREATOR CHAR (8) NOT NULL, SEQNO SMALLINT NOT NULL, STMTNO
0000005 SMALLINT NOT NULL, SECTNO SMALLINT NOT NULL, IBMREQD CHAR (1) NOT NULL,
0000006 TEXT VARCHAR (254) NOT NULL)
0000007 -- SQL in stmt: 88
0000008 DECLARE C_STMT CURSOR FOR SELECT SEQNO, STMTNO, TEXT FROM
0000009 SYSIBM.SYSSTMT WHERE PLNAME = :SYSSTM.PLNAME AND NAME = :SYSSTM.NAME
0000010 ORDER BY STMTNO, SEQNO
0000011 -- SQL in stmt: 94
0000012 OPEN C_STMT
0000013 -- SQL in stmt: 97
0000014 FETCH C_STMT INTO :SYSSTM.SEQNO, :SYSSTM.STMTNO, :SYSSTM.TEXT
0000015 -- SQL in stmt: 104
0000016 FETCH C_STMT INTO :SYSSTM.SEQNO, :SYSSTM.STMTNO, :SYSSTM.TEXT
0000017 -- SQL in stmt: 124
0000018 FETCH C_STMT INTO :SYSSTM.SEQNO, :SYSSTM.STMTNO, :SYSSTM.TEXT
0000019 -- SQL in stmt: 144
```

Figure 71. Extracted SQL Panel (ADB21KSE)

Collections Panel

This panel (Figure 72) appears when you select option L on the DB2 System Catalog panel.

Use this panel to display the collections in the DB2 catalog.

Note that from the Collections panel, you can issue the S line command to show the SQL statements. This function is shown at the end of this subsection.

```
DB2 Admin ------------------ DB2X Collections -------------  ROW 1 TO 21 OF 55
Command ===>                                                  Scroll ===> PAGE

Valid line commands are:
 K - Packages in collection  PL - Package lists  P - Local plans
 A - Authorizations  GR - Grant  SQ - SQL in packages in collection

                      Number of
S    Collection       Packages
     *                *
---- ---------------- -----------
     ADBL                      25
     ADB2L                      1
     DB2ADM                     3
     DB2PME3                  100
     DDQS                       3
     DISTTEST                   5
     DLEEDM                     1
     DPGROTH                    1
     DSNESPCS                   1
     DSNESPRR                   1
     DSNQCATV                  40
```

Figure 72. Collections Panel (ADB21L)

The fields on this panel are:

S
Input field where you enter one of the line commands listed on the panel.

COLLECTION
Name of the package collection.

NUMBER OF PACKAGES
Number of packages in the collection.

Extracted SQL Panel

This panel (Figure 73) appears when you issue line command SQ (show SQL) on the Collections panel.

Use this panel to see the SQL statements in a package shown on the Collections panel.

```
 DB2 Admin ------------------ Extracted SQL ------------------ Columns 001 072
 Command ===>                                                 Scroll ===> HALF

****** ***************************** TOP OF DATA ******************************
000001 -- SQL statements in PACKAGE :
000002 --   ADBL.ADBMAIN.(1999-02-25-17.44.52.998160)
000003 -- SQL in stmt: 610
000004 COMMIT WORK
000005 -- SQL in stmt: 2458
000006 DECLARE S1 STATEMENT
000007 -- SQL in stmt: 2500
000008 PREPARE S1 FROM :H
000009 -- SQL in stmt: 2605
000010 DESCRIBE S1 INTO :H
000011 -- SQL in stmt: 2618
000012 EXECUTE S1
000013 -- SQL in stmt: 2744
000014 DECLARE C1 CURSOR FOR S1
000015 -- SQL in stmt: 2750
000016 OPEN C1
000017 -- SQL in stmt: 2762
000018 FETCH C1 USING DESCRIPTOR :H
000019 -- SQL in stmt: 2835
000020 CLOSE C1
000021 -- SQL in stmt: 5314
000022 COMMIT WORK
000023 -- SQL in stmt: 5342
000024 ROLLBACK WORK
000025 -- SQL in stmt: 5347
000026 COMMIT WORK
```

Figure 73. Extracted SQL Panel (ADB21KSE)

DBRMs Panel

This panel (Figure 74) appears when you select option M on the DB2 System Catalog panel.

Use this panel to display the DBRMs in the DB2 catalog.

Note that from the DBRMs panel, you can issue the S line command to show the SQL statements. This function is shown at the end of this subsection.

```
DB2 Admin ---------------------- DB2X DBRMs -----------------  ROW 1 TO 2 OF 2
Command ===>                                                 Scroll ===> PAGE

Valid line commands are:
 P - Plans  B - Browse DBRM  S - SQL statements  I - Interpretation

S Name     Owner    PL Name  Q C H P Date P Time   PDS Name
  *        *        *        * * * *      *        *
- -------- -------- -------- - - - ------ -------- ----------------------------
  DSNTIAD  DSCGDB2  DSNTIA61 N N B 990115 11095146 DB2.DSN610.DBRMLIB.DATA
  DSNTIAD  DSCGDB2  DSNTIAD  N N B 990115 11095146 DB2.DSN610.DBRMLIB.DATA
  DSNHSPMN DSGDB2   DSNHSP61 N N B 980722 21264239 DB2.DSN610.SDSNDBRM
  DSNTIAUL DSCGDB2  DSNTIB61 N N B 990115 14131450 DB2.DSN610.DBRMLIB.DATA
  DSNTIAUL DSCGDB2  DSNTIAUL N N B 990115 14131450 DB2.DSN610.DBRMLIB.DATA
  DSN8BC3  DSCGDB2  DSN8BH61 N N 3 990115 14270156 DB2.DSN610.DBRMLIB.DATA
****************************** END OF DB2 DATA ******************************
```

Figure 74. DBRMs Panel (ADB21M)

The fields on this panel are:

S
Input field where you enter one of the line commands listed on the panel.

NAME
Name of the database request module (DBRM).

OWNER
Authorization ID of the owner of the application plan.

PL NAME
Name of the application plan of which the DBRM is a part.

Q
SQL escape character, which is one of the following:

N	Apostrophe (')
Y	Quotation mark (?)

C
Decimal point, which is one of the following:

N	Period (.)
Y	Comma (,)

H
Host language used, which is one of the following:

F	FORTRAN
B	Assembler
C	OS/VS COBOL
P	PL/I
D	C
2	All other COBOL languages

P DATE
Date of precompilation of DBRM, in the form YYMMDD.

P TIME
Time of precompilation of DBRM, in the form HHMMSSTH.

PDS NAME
Name of the partitioned data set of which the DBRM is a member.

Extracted SQL Panel

This panel (Figure 75) appears when you issue line command S (show SQL) on the DBRMs panel.

Use this panel to see the SQL statements in a DBRM.

```
 DB2 Admin ------------------ Extracted SQL ------------------ Columns 001 072
 Command ===>                                                 Scroll ===> HALF

****** ***************************** TOP OF DATA ******************************
000001 -- SQL statements in DBRM: DSNTIA61.DSNTIAD
000002 -- SQL in stmt: 982
000003 WHENEVER SQLERROR GO TO EXECERR
000004 -- SQL in stmt: 983
000005 WHENEVER SQLWARNING GO TO EXECWRN
000006 -- SQL in stmt: 984
000007 WHENEVER NOT FOUND GO TO EXECWRN
000008 -- SQL in stmt: 1226
000009 CONNECT
000010 -- SQL in stmt: 1278
000011 CONNECT RESET
000012 -- SQL in stmt: 1405
000013 CONNECT TO :H
000014 -- SQL in stmt: 1528
000015 SET CONNECTION :H
000016 -- SQL in stmt: 1649
000017 RELEASE CURRENT
000018 -- SQL in stmt: 1700
000019 RELEASE ALL
000020 -- SQL in stmt: 1780
000021 RELEASE ALL PRIVATE
000022 -- SQL in stmt: 1829
000023 RELEASE ALL SQL
000024 -- SQL in stmt: 1938
000025 RELEASE :H
```

Figure 75. Extracted SQL Panel (ADB21KSE)

Database Structures Panel

This panel (Figure 76) appears when you select option DS on the Administration Menu panel.

Use this panel to see a structured list of objects in the database you have selected.

```
DB2 Admin --------------- DB2X Database Structures --------  ROW 1 TO 23 OF 99
Command ===>                                                  Scroll ===> PAGE

Valid line commands are:
 S - Show object

Select Type Object Name              Owner
       *    *                        *
------ ---- ------------------------ --------
       D--- DSNDB06 ---------------- SYSIBM
        S     SYSCOPY                SYSIBM
         T      SYSCOPY              SYSIBM
          I       DSNUCX01           SYSIBM
          I       DSNUCH01           SYSIBM
        S     SYSDBASE               SYSIBM
         T      SYSCOLAUTH           SYSIBM
         T      SYSCOLUMNS           SYSIBM
          I       DSNDCX01           SYSIBM
         T      SYSFIELDS            SYSIBM
         T      SYSFOREIGNKEYS       SYSIBM
         T      SYSINDEXES           SYSIBM
          I       DSNDXX02           SYSIBM
```

Figure 76. Database Structures Panel (ADB21DS)

The meaning of the fields on this panel is as follows:

SELECT
Input field where you enter line command S.

TYPE
Type of object, which is one of the following:

D	Database
S	Table Space
T	Table
X	Index

OBJECT NAME
Name of the object

OWNER
Authorization ID of the owner of the object.

Schemas Panel

This panel (Figure 77) appears when you select option H on the System Catalog panel.

Use this panel to display information about the schemas you have selected.

Note that from this panel you can reverse engineer DB2 objects, as described in Chapter 7, “Reverse Engineering Panels” on page 143.

```
DB2 Admin ---------------------- DB2X Schemas ---------------------- Row 1 of 4
Command ===>                                                  Scroll ===> PAGE

Valid line commands are:
 E - Data type   F - Function  J - Trigger  O - Stored procedure  A - Auth

             Number of   Number of   Number of   Number of
S   Schema   Data Types  Functions   Procedures  Triggers
    *        *           *           *           *
--- -------- ----------- ----------- ----------- -----------
    ISTJE             17          44           3           3
    SYSPROC            0           0           1           0
    DSN8               0           0           1           0
    ADB                0           0           1           0
****************************** END OF DB2 DATA *******************************
```

Figure 77. Schemas Panel (ADB21H)

The meaning of the fields on this panel is as follows:

S
Input field where you enter one of the line commands listed on the panel.

SCHEMA
Schema of the data type.

NUMBER OF DATA TYPES
Number of distinct data types defined in this schema.

NUMBER OF FUNCTIONS
The number of user-defined functions and implicitly-defined functions in this schema.

NUMBER OF PROCEDURES
Number of stored procedures defined in this schema.

NUMBER OF TRIGGERS
Number of table triggers defined in this schema.

Data Types Panel

This panel (Figure 78) appears when you select option E on the System Catalog panel.

Use this panel to display information about the data types you have selected.

Note that from this panel you can reverse engineer DB2 objects, as described in Chapter 7, “Reverse Engineering Panels” on page 143.

```
DB2 Admin ------------------- DB2X Data Types -------------------- Row 1 of 17
Command ===>                                                  Scroll ===> PAGE

Valid line commands are:
 T - Tables  A - Auth  AH - Schema auth  GR - Grant  DROP - Drop  COM - Comment
 I - Interpret

                                 Source
S    Schema   Data Type Name     Schema   Source Date Type   Length      Scale
     *        *                  *        *                  *           *
---- -------- ------------------ -------- ------------------ ----------- ------
     ISTJE    KR                 SYSIBM   DECIMAL                    15      2
     ISTJE    T-INT2             SYSIBM   INTEGER                     4      0
     ISTJE    T-SMI              SYSIBM   SMALLINT                    2      0
     ISTJE    T-INT              SYSIBM   INTEGER                     4      0
     ISTJE    T-REAL             SYSIBM   REAL                        4      0
     ISTJE    T-DOUBLE           SYSIBM   DOUBLE                      8      0
     ISTJE    T-FLOAT7           SYSIBM   DOUBLE                      8      0
     ISTJE    T-CHAR             SYSIBM   CHAR                      100      0
     ISTJE    T-VARCHAR          SYSIBM   VARCHAR                   100      0
     ISTJE    T-CLOB             SYSIBM   CLOB                     1024      0
     ISTJE    T-BLOB             SYSIBM   BLOB                     1024      0
```

Figure 78. Data Types Panel (ADB21E)

The meaning of the fields on this panel is as follows:

S
Input field where you enter one of the line commands listed on the panel.

SCHEMA
Schema of the data type.

DATA TYPE NAME
Name of the data type.

SOURCE SCHEMA
Schema of the source data type.

SOURCE DATA TYPE
Name of the source data type for this distinct data type.

LENGTH
Maximum length for the data type, or precision for distinct types.

SCALE
Scale for distinct data types, based on the built in decimal type.

Functions Panel

This panel (Figure 79) appears when you select option F on the System Catalog panel.

Use this panel to display information about the functions you have selected.

Note that from this panel you can reverse engineer DB2 objects, as described in Chapter 7, “Reverse Engineering Panels” on page 143.

```
DB2 Admin -------------------- DB2X Functions -------------------- Row 1 of 44
Command ===>                                                  Scroll ===> PAGE

Valid line commands are:
 AH - Schema Auth  A - Auth  DROP - Drop  AL - Alter   K - Package
 PA - Parms  RT - Return type  DIS - Display  STO - Stop  STA - Start
 COM - Comment  I - Interpretation
                                                    D         S
                                          F         E E C P   Q S P E External
S    Schema   Name     Specific Name      O T Parms  T A F S F L R T S Name
     *        *        *                  * * *      * * * * * * * * * *
---- -------- -------- ------------------ - - ------ - - - - - - - - - --------
     ISTJE    +        SQL990208100338896 U S      2     N
     ISTJE    -        KR_MINUS           U S      2     N
     ISTJE    BLOB     SQL99020816075424# S S      1     Y
     ISTJE    CHAR     SQL990208160600039 S S      1     Y
     ISTJE    CLOB     SQL99020816074873# S S      1     Y
     ISTJE    D        SQL99020817171170M S S      1     Y
     ISTJE    DATE     SQL99020816083184# S S      1     Y
     ISTJE    DECIMAL  SQL99011815223541B S S      1     Y
     ISTJE    DECIMAL  SQL99020817171173M S S      1     Y
     ISTJE    DECIMAL  SQL990218162815951J S S      1     Y
```

Figure 79. Functions Panel (ADB21F)

The meaning of the fields on this panel is as follows:

S
Input field where you enter one of the line commands listed on the panel.

SCHEMA
Schema of the function.

NAME
Name of the function.

SPECIFIC NAME
Specific name of the function.

O
Origin of the function, which is one of the following:

- **E** External
- **U** Sourced
- **S** System generated

FT
Function type, which is one of the following:

C Column
S Scaler
T Table

PARMS
Number of parameters for the function.

DET
Whether the external function is deterministic (that is, returns the same result when called using the same parameters). This field contains one of the following:

Y Yes
N No

EA
Whether the external function changes the state of an object that DB2 does not manage. This field contains one of the following:

Y Yes
N No

CF
Cast function, which is one of the following:

Y Yes
N No

PS
Parameter style, which is one of the following:

D DB2SQL
G General
N General with nulls

F
Fenced (applies if it is run separately from DB2).

SQL
Whether SQL statements are allowed, which is one of the following:

N Contains no SQL statements
C Contains SQL statements
R Reads SQL data
M Modifies SQL data

SR
Whether the program should remain resident when it ends.

PT
Program type, which is one of the following:

M Main
S Subroutine

ES
External security, which is one of the following:

D DB2 address space user
U User
C Definer

EXTERNAL NAME
Load module name for the stored procedure.

Stored Procedures Panel

This panel (Figure 80) appears when you select option O on the System Catalog panel.

Use this panel to display information about the stored procedures you have selected.

Note that from this panel you can reverse engineer DB2 objects, as described in Chapter 7, “Reverse Engineering Panels” on page 143.

```
DB2 Admin ---------------- DB2X Stored Procedures ----------------- Row 1 of 6
Command ===>                                                  Scroll ===> PAGE

Valid line commands are:
 AH - Schema Auth  A - Auth  DROP - Drop  AL - Alter   K - Package
 PA - Parms  RT - Return type  DIS - Display  STO - Stop  STA - Start
 GR - Grant  COM - Comment  I - Interpretation
                                                    S
                                                P   Q S P E C Result External
S    Schema   Name               Parms  Language S F L R T S R Sets   Name
     *        *                  *      *        * * * * * * * *      *
---- -------- ------------------ ------ -------- - - - - - - - ------ ---------
     ADB      ADB2RE                  6 PLI      D Y M N M D N      2 ADB2RE
     SYSPROC  DSNWZP                  1 ASSEMBLE G Y C N M D N      0 DSNWZP
     DSN8     DSN8EP2                 5 PLI      N Y N N M D N      0 DSN8EP2
     ISTJE    DUMMY                   1          D Y N N M D N      0 DUMMY
     ISTJE    T1                      1 PLI      D Y C N M D N      0 T1
     ISTJE    T2                      2 PLI      G Y M Y M D Y      1 T3
****************************** END OF DB2 DATA *******************************
```

Figure 80. Stored Procedures Panel (ADB21O)

The meaning of the fields on this panel is as follows:

S
Input field where you enter one of the line commands listed on the panel.

SCHEMA
Schema of the stored procedure.

NAME
Name of the stored procedure.

PARMS
Number of parameters for the stored procedure.

LANGUAGE
Implementation language.

PS
Parameter style, which is one of the following:

D	DB2SQL
G	General
N	General with nulls

F
Fenced (applies if it is run separately from DB2).

SQL
Whether SQL statements are allowed, which is one of the following:

N Contains no SQL statements
C Contains SQL statements
R Reads SQL data
M Modifies SQL data

SR
Whether the program should remain resident when it ends.

PT
Program type, which is one of the following:

M Main
S Subroutine

ES
External security, which is one of the following:

D DB2 address space user
U User
C Definer

CR
Commit on return.

RESULT SETS
Maximum number of result sets that can be returned.

EXTERNAL NAME
Load module name for the stored procedure.

Triggers Panel

This panel (Figure 81) appears when you select option J on the System Catalog panel.

Use this panel to display information about the triggers you have selected.

```
DB2 Admin -------------------- DB2X Triggers ---------------------- Row 1 of 3
Command ===>                                                 Scroll ===> PAGE

Valid line commands are:
 T - Table  A - Schema Auth  I - Interpretation  DROP - Drop  K - Package
 SQ - SQL  COM - Comment
                                Table    Table                    Created
S    Schema   Name     Owner    Owner    Name               T E G By
     *        *        *        *        *                  * * * *
---- -------- -------- -------- -------- ------------------ - - - --------
     ISTJE    TESTTRIG ISTJE    ISTJE    TEST_KR            A U R ISTJE
     ISTJE    TESTTRI2 ISTJE    ISTJE    TEST_KR            A U R ISTJE
     ISTJE    T1       ISTJE    ISTJE    TEST_KR            B I R ISTJE
****************************** END OF DB2 DATA ******************************
```

Figure 81. Triggers Panel (ADB21J)

The meaning of the fields on this panel is as follows:

S
Input field where you enter one of the line commands listed on the panel.

SCHEMA
Name of the schema.

NAME
Name of the trigger.

OWNER
Authorization ID of the owner of the trigger.

TABLE OWNER
Authorization ID of the owner of the table to which the trigger belongs.

TABLE NAME
Name of the table to which the trigger belongs.

T
Trigger time, which is one of the following:

A After
B Before

E
Trigger event, which is one of the following:

I Insert
U Update
D Delete

G
Granularity of the trigger, which is one of the following:

R For each row
S For each statement

CREATED BY
Primary authorization ID of the user who created the trigger.

Storage Group Authorizations Panel

This panel (Figure 82) appears when you select option GA on the DB2 System Catalog panel.

Use this panel to display the authorizations for storage groups in the DB2 catalog.

```
DB2 Admin ------------- DB2 Storage Group Authorizations --------- Row 1 of 11
Command ===>                                                  Scroll ===> PAGE

Valid line commands are:
 R - Revoke  GR - Grant  G - Storage group  I - Interpretation

                         G Storage  H Grant                      Use
Select Grantor  Grantee  T Group    G Timestamp                  Auth
       *        *        * *        * *                          *
------ -------- -------- - -------- - -------------------------- ----
       DSCGDB2  DSCGDB2    DSN8G61U S 1999-01-15-14.13.26.989997 G
       DSCGDB2  DSCGDB2    DSN8G610 S 1999-01-15-12.15.03.483359 G
       DSCGDB2  PUBLIC     DSN8G610 S 1999-01-15-12.17.15.325852 Y
****************************** END OF DB2 DATA ******************************
```

Figure 82. Storage Group Authorizations Panel (ADB2AG)

The fields on this panel are:

SELECT
Input field where you enter one of the line commands listed on the panel.

GRANTOR
Authorization ID of the user who granted the privilege.

GRANTEE
Authorization ID of the user who holds the privilege, or the name of the plan or package that uses the privilege.

GT
Type of grantee, which is one of the following:

Blank	Authorization ID
P	Plan

STORAGE GROUP
Name of the storage group.

HG

Authorization level of the user from whom the privileges were received. This field contains one of the following:

C	DBCTL
D	DBADM
L	SYSCTRL
M	DBMAINT
P	PACKADM (on a specific collection)
A	PACKADM (on collection *)
S	SYSADM

GRANT TIMESTAMP

Time when the GRANT statement was executed.

USE AUTH

Whether the privilege is held with the GRANT option.

Y	The privilege is held without the GRANT option.
G	The privilege is held with the GRANT option.

Database Authorizations Panel

This panel (Figure 83) appears when you select option DA on the DB2 System Catalog panel.

Use this panel to display the authorizations for databases in the DB2 catalog.

```
DB2 Admin --------------- DB2X Database Authorizations ----------- Row 1 of 29
Command ===>                                                  Scroll ===> PAGE

Valid line commands are:                          C C D D D D I L R R R S S S
 R - Revoke  GR - Grant  D - Database             R R B B B I R M O E E E T T T
 I - Interpretation                               E E A C M S O A A O C P A A O
                                                  T T D T A P P G D R O A R T P
                      Database Grant            H A S M R I D D E D G V I T S
Sel Grantor  Grantee  Name     Timestamp        G B     L N B B   B     R
    *        *        *        *                * * * * * * * * * * * * * * *
--- -------- -------- -------- ---------------- - - - - - - - - - - - - - - -
    DSCGDB2  DSCGDB2  DSNDB07  1999-01-15-11.21 S G G G G G G G G G G G G G G
    DSCGDB2  DSCGDB2  DSNRLST  1999-01-15-11.30 S G G G G G G G G G G G G G G
    DSCGDB2  DSCGDB2  DSNRGFDB 1999-01-15-11.32 S G G G G G G G G G G G G G G
    DSCGDB2  PUBLIC   DSNDB04  1999-01-15-11.32 S Y Y
    DSCGDB2  DSCGDB2  DSN8D61A 1999-01-15-12.15 S G G G G G G G G G G G G G G
    DSCGDB2  DSCGDB2  DSN8D61P 1999-01-15-12.15 S G G G G G G G G G G G G G G
    DSCGDB2  PUBLIC   DSN8D61A 1999-01-15-12.17 S Y Y Y Y Y Y Y Y Y Y Y Y Y Y
    DSCGDB2  PUBLIC   DSN8D61P 1999-01-15-12.17 S Y Y Y Y Y Y Y Y Y Y Y Y Y Y
    DSCGDB2  DSCGDB2  DSN8D61U 1999-01-15-14.13 S G G G G G G G G G G G G G G
    DSCGDB2  DSCGDB2  DSN8D61L 1999-01-15-15.06 S G G G G G G G G G G G G G G
    ISTJE    ISTJE    ISTJED   1999-01-19-10.31   G G G G G G G G G G G G G G
```

Figure 83. Database Authorizations Panel (ADB2AD)

The fields on this panel are:

SEL
Input field where you enter one of the line commands listed on the panel.

GRANTOR
Authorization ID of the user who granted the privilege.

GRANTEE
Authorization ID of the user who holds the privilege.

DATABASE NAME
Name of the database.

GRANT TIMESTAMP
Time when the GRANT statement was executed.

HG
Authorization level of the user from whom the privileges were received. This field contains one of the following:

C	DBCTL
D	DBADM
L	SYSCTRL
M	DBMAIN
S	SYSADM

CRETAB
Whether the grantee can create tables within the database:

Y The privilege is held without the GRANT option.
G The privilege is held with the GRANT option.

CRETS
Whether the grantee can create table spaces within the database:

Y The privilege is held without the GRANT option.
G The privilege is held with the GRANT option.

DBADM
Whether the grantee has DBADM authority over the database:

Y The privilege is held without the GRANT option.
G The privilege is held with the GRANT option.

DBCTRL
Whether the grantee has DBCTRL authority over the database:

Y The privilege is held without the GRANT option.
G The privilege is held with the GRANT option.

DBMAIN
Whether the grantee has DBMAINT authority over the database:

Y The privilege is held without the GRANT option.
G The privilege is held with the GRANT option.

DISPDB
Whether the grantee can issue the DISPLAY command against the database:

Y The privilege is held without the GRANT option.
G The privilege is held with the GRANT option.

DROPDB
Whether the grantee can issue the ALTER and DROP database statements:

Y The privilege is held without the GRANT option.
G The privilege is held with the GRANT option.

IMAGE
Whether the grantee can use the COPY, MERGECOPY, MODIFY, and QUIESCE utilities on the database:

Y The privilege is held without the GRANT option.
G The privilege is held with the GRANT option.

LOADDB
Whether the grantee can use the LOAD utility to load tables in the database:

Y The privilege is held without the GRANT option.
G The privilege is held with the GRANT option.

REORG
Whether the grantee can use the REORG utility to reorganize table spaces and indexes in the database:

Y The privilege is held without the GRANT option.
G The privilege is held with the GRANT option.

RECOV
Whether the grantee can use the RECOVER and REPORT utilities on table spaces in the database:

Y The privilege is held without the GRANT option.
G The privilege is held with the GRANT option.

REPAIR
Whether the grantee can use the DIAGNOSE and REPAIR utilities on table spaces and indexes in the database:

Y The privilege is held without the GRANT option.
G The privilege is held with the GRANT option.

START
Whether the grantee can issue the START command against the database:

Y The privilege is held without the GRANT option.
G The privilege is held with the GRANT option.

STATS
Whether the grantee can issue the CHECK and RUNSTATS utilities against the database:

Y The privilege is held without the GRANT option.
G The privilege is held with the GRANT option.

STOP
Whether the grantee can issue the STOP command against the database:

Y The privilege is held without the GRANT option.
G The privilege is held with the GRANT option.

Table Space Authorizations Panel

This panel (Figure 84) appears when you select option SA on the DB2 System Catalog panel.

Use this panel to display the authorizations for table spaces in the DB2 catalog.

```
DB2 Admin ------------- DB2 Table Space Authorizations ----------- Row 1 of 11
Command ===>                                                  Scroll ===> PAGE

Valid line commands are:
 R - Revoke  GR - Grant  S - Table space  D - Database  I - Interpretation

                          G          Table    H                            Use
Select Grantor  Grantee   T Database Space    G Grant timestamp            Auth
       *        *         * *        *        * *                          *
------ -------- -------- - -------- -------- - -------------------------- -
       DSCGDB2  PUBLIC     DSNDB04  SYSDEFLT S 1999-01-15-11.32.48.483145 Y
       DSCGDB2  PUBLIC     DSN8D61A DSN8S61D S 1999-01-15-12.17.15.401564 Y
       DSCGDB2  PUBLIC     DSN8D61A DSN8S61E S 1999-01-15-12.17.15.423903 Y
       DSCGDB2  PUBLIC     DSN8D61A DSN8S61P S 1999-01-15-12.17.15.447728 Y
       DSCGDB2  PUBLIC     DSN8D61A DSN8S61S S 1999-01-15-12.17.15.469678 Y
       DSCGDB2  PUBLIC     DSN8D61L DSN8S61B S 1999-01-15-15.06.44.427978 Y
       DSCGDB2  PUBLIC     DSN8D61L DSN8S61L S 1999-01-15-15.06.44.485593 Y
       DSCGDB2  PUBLIC     DSN8D61L DSN8S61M S 1999-01-15-15.06.44.511877 Y
       DSCGDB2  PUBLIC     DSN8D61L DSN8S61N S 1999-01-15-15.06.44.535951 Y
       DSCGDB2  PUBLIC     DSN8D61P DSN8S61C S 1999-01-15-12.17.15.498423 Y
       DSCGDB2  PUBLIC     DSN8D61P DSN8S61Q S 1999-01-15-12.17.15.520304 Y
****************************** END OF DB2 DATA ******************************
```

Figure 84. Table Space Authorizations Panel (ADB2AS)

The fields on this panel are:

SELECT
Input field where you enter one of the line commands listed on the panel.

GRANTOR
Authorization ID of the user who granted the privilege.

GRANTEE
Authorization ID of the user who holds the privilege, or the name of the plan or package that uses the privilege.

GT
Type of grantee, which is one of the following:

Blank	Authorization ID
P	Plan

DATABASE
Name of the database.

TABLE SPACE
Name of the table space.

HG

Authorization level of the user from whom the privileges were received. This field contains one of the following:

C	DBCTL
D	DBADM
L	SYSCTRL
M	DBMAINT
S	SYSADM

GRANT TIMESTAMP

Time when the GRANT statement was executed.

USE AUTH

Whether the privilege is held with the GRANT option.

Y	The privilege is held without the GRANT option.
G	The privilege is held with the GRANT option.

Table Authorizations Panel

This panel (Figure 85) appears when you select option TA on the DB2 System Catalog panel.

Use this panel to display the authorizations for tables in the DB2 catalog.

```
DB2 Admin ----------------- DB2 Table Authorizations ------------ Row 1 of 606
Command ===>                                                  Scroll ===> PAGE

Valid line commands are:
 R - Revoke  GR - Grant  T - Table  I - Interpretation     U   D   I S U   R
 CA - Column authorisations                                P A E I N E P R E
                                                           D L L N S L D E F T
                                                           C T E D E E A F C R
                     G                                     O E T E R C T E O I
S  Grantor  Grantee  T Owner    Name                H Date  L R E X T T E R L G
   *        *        * *        *                   * *     * * * * * * * * * *
-- -------- -------- - -------- ------------------ - ------ - - - - - - - - - -
   PUBLIC*  DSN8BH61 P DSN8610  VEMPLP               990115             Y
   PUBLIC*  DSN8BH61 P DSN8610  VPHONE               990115           Y
   DSN861SA DSN861SA   DSN861SA STAFF               990115   G G G G G G G   G
   DSN861SA DSN861SA   DSN861SA STAFFV1              990115     G   G G G
   DSN861SA DSN861SA   DSN861SA TESTSTUFF            990115   G G G G G G G   G
   DSN8610  DSN8610    DSN8610  ACT                 S 990115   G G G G G G G   G
   DSN8610  DSN8610    DSN8610  DEPT                S 990115   G G G G G G G   G
   DSN8610  DSN8610    DSN8610  EACT                S 990115   G G G G G G G   G
   DSN8610  DSN8610    DSN8610  EDEPT               S 990115   G G G G G G G   G
   DSN8610  DSN8610    DSN8610  EEMP                S 990115   G G G G G G G   G
   DSN8610  DSN8610    DSN8610  EEPA                S 990115   G G G G G G G   G
   DSN8610  DSN8610    DSN8610  EMP                 S 990115   G G G G G G G   G
   DSN8610  DSN8610    DSN8610  EMP_PHOTO_RESUME    S 990115   G G G G G G G   G
   DSN8610  DSN8610    DSN8610  EMPPROJACT          S 990115   G G G G G G G   G
   DSN8610  DSN8610    DSN8610  EPROJ               S 990115   G G G G G G G   G
```

Figure 85. Table Authorizations Panel (ADB2AT)

The fields on this panel are:

S
Input field where you enter one of the line commands listed on the panel.

GRANTOR
Authorization ID of the user who granted the privilege.

GRANTEE
Authorization ID of the user who holds the privilege, or the name of the plan or package that uses the privilege.

GT
Type of grantee, which is one of the following:

Blank	Authorization ID
P	Plan

OWNER
Authorization ID of the owner of the table or view.

NAME
Name of the table or view.

HG
Authorization level of the user from whom the privileges were received. This field contains one of the following:

C	DBCTL
D	DBADM
L	SYSCTRL
M	DBMAINT
S	SYSADM

DATE GRANT
Date the privilege was granted, in the form YYMMDD.

UPDCOL
Whether the grantee can update some of the columns in the table. This field contains one of the following:

Asterisk (*)	Grantee can update some of the columns.
Blank	Grantee cannot update some of the columns.

ALTER
Whether the grantee can alter the table:

Y	The privilege is held without the GRANT option.
G	The privilege is held with the GRANT option.

DELETE
Whether the grantee can delete rows from the table or view:

Y	The privilege is held without the GRANT option.
G	The privilege is held with the GRANT option.

INDEX
Whether the grantee can create indexes on the table:

Y	The privilege is held without the GRANT option.
G	The privilege is held with the GRANT option.

INSERT
Whether the grantee can insert rows into the table or view:

Y	The privilege is held without the GRANT option.
G	The privilege is held with the GRANT option.

SELECT
Whether the grantee can select rows from the table or view:

Y	The privilege is held without the GRANT option.
G	The privilege is held with the GRANT option.

UPDATE
Whether the grantee can update rows in the table or view:

Y	The privilege is held without the GRANT option.
G	The privilege is held with the GRANT option.

REFER
Whether the grantee can create or drop referential constraints in which the table is a parent.

Y The privilege is held without the GRANT option.
G The privilege is held with the GRANT option.

REFCOL
If the value of REFER applies to some columns but not to others, the value of this column is blank.

If the value of REFER applies uniformly to all columns of the table, the value of this column is an asterisk (*). In this case, rows will exist in SYSIBM.SYSCOLAUTH with the privilege of R and matching timestamps that list the columns on which the R privilege has been granted.

TRIG
Whether the GRANTEE can create triggers in which the table is named as the triggering table:

Y The privilege is held without the GRANT option.
G The privilege is held with the GRANT option.

Column Update Authorizations Panel

This panel (Figure 86) appears when you select option CA on the DB2 System Catalog panel.

Use this panel to display the authorizations for column updates in the DB2 catalog.

```
DB2 Admin ------------- DB2 Column Update Authorizations ---------- Row 1 of 3
Command ===>                                                 Scroll ===> PAGE

Valid line commands are:
 GR - Grant  C - Column  I -Interpretation
                    G                                                Date   Time
S  Grantor  Grantee  T Owner    Name           Column Name           Grant  Gr   P
   *        *        * *        *              *                     *      *    *
-- -------- -------- - -------- -------------- ------------------ ------ ---- -
   ISTJE    XXX        ISTJE    TEST_KR        SALDO              990208 1216
   ISTJE    XX         ISTJE    TEST_KR        SALDO              990215 1202
   ISTJE    XX         ISTJE    TEST_KR        SALDO              990215 1202 R
****************************** END OF DB2 DATA *******************************
```

Figure 86. Columns Update Authorizations Panel (ADB2AC)

The fields on this panel are:

S
Input field where you enter one of the line commands listed on the panel.

GRANTOR
Authorization ID of the user who granted the privilege.

GRANTEE
Authorization ID of the user who holds the privilege, or the name of the plan or package that uses the privilege.

GT
Type of grantee, which is one of the following:

Blank	Authorization ID
P	Plan or a package

OWNER
Authorization ID of the owner of the table or view on which the update privilege is held.

NAME
Name of the table or view.

COLUMN NAME
Name of the column to which the update privilege applies.

DATE GRANT
Date the privilege was granted, in the form YYMMDD.

TIME GR
Time the privilege was granted, in the form HHMM.

P
Type of privilege, which is one of the following:

Blank	UPDATE
R	REFERENCES

Application Plan Authorizations Panel

This panel (Figure 87) appears when you select option PA on the DB2 System Catalog panel.

Use this panel to display the authorizations for application plans in the DB2 catalog.

```
DB2 Admin ----------- DB2 Application Plan Authorizations -------- Row 1 of 46
Command ===>                                                    Scroll ===> PAGE

Valid line commands are:
 R - Revoke  GR - Grant  P - Plan  I - Interpretation

                         G Plan                                  H B E
Select Grantor  Grantee  T Name     Grant Timestamp              G D X
       *        *        * *        *                            * * *
------ -------- -------- - -------- -------------------------- - - -
       DSCGDB2  DSCGDB2    DSNTIA61 1999-01-15-11.19.29.700488   G G
       DSCGDB2  PUBLIC     DSNTIA61 1999-01-15-11.32.48.613258 S   Y
       DSCGDB2  DSCGDB2    DSNTIAD  1999-01-15-11.21.36.587758   G G
       DSCGDB2  PUBLIC     DSNTIAD  1999-01-15-11.32.48.634030 S   Y
       DSCGDB2  DSCGDB2    DSNESPCS 1999-01-15-11.30.24.384647   G G
       DSCGDB2  PUBLIC     DSNESPCS 1999-01-15-11.32.48.503374 S   Y
       DSCGDB2  DSCGDB2    DSNESPRR 1999-01-15-11.30.25.033025   G G
       DSCGDB2  PUBLIC     DSNESPRR 1999-01-15-11.32.48.523812 S   Y
       DSCGDB2  DSCGDB2    DSNEDCL  1999-01-15-11.30.26.068502   G G
       DSCGDB2  PUBLIC     DSNEDCL  1999-01-15-11.32.48.545083 S   Y
       DSCGDB2  DSCGDB2    DSNHYCRD 1999-01-15-11.30.32.721889   G G
       DSCGDB2  PUBLIC     DSNHYCRD 1999-01-15-11.32.48.565012 S   Y
```

Figure 87. Application Plan Authorization Panel (ADB2AP)

The fields on this panel are:

SELECT
Input field where you enter one of the line commands listed on the panel.

GRANTOR
Authorization ID of the user who granted the privilege.

GRANTEE
Authorization ID of the user who holds the privilege, or the name of the plan or package that uses the privilege.

GT
Type of grantee, which is one of the following:

Blank Authorization ID
P Plan

PLAN NAME
Name of the application plan on which the priveleges are held.

GRANT TIMESTAMP
Time when the GRANT statement was executed.

HG
Authorization level of the user from whom the privileges were received. This field contains one of the following:

C	DBCTL
D	DBADM
L	SYSCTRL
M	DBMAINT
S	SYSADM

BD
Bind authorization, that is, whether the grantee can use BIND, REBIND, or FREE commands against the plan:

Y	The privilege is held without the GRANT option.
G	The privilege is held with the GRANT option.

EX
Execute authorization, that is, whether the grantee can run programs that use the application plan:

Y	The privilege is held without the GRANT option.
G	The privilege is held with the GRANT option.

Package Authorizations Panel

This panel (Figure 88) appears when you select option KA on the DB2 System Catalog panel.

Use this panel to display the authorizations for packages in the DB2 catalog.

```
DB2 Admin --------------- DB2 Package Authorizations ------------- Row 1 of 31
Command ===>                                                  Scroll ===> PAGE

Valid line commands are:
 R - Revoke  GR - Grant  K - Package  I - Interpretation

                      G                    Package                       H B E C
Sel Grantor  Grantee  T Collection         Name     Grant Timestamp      G D X O
    *        *        * *                  *        *                    * * * *
--- -------- -------- - ------------------ -------- -------------------- - - - -
    DSCGDB2  DSCGDB2    DSNESPCS           DSNESM68 1999-01-15-11.30.17   G G G
    DSCGDB2  DSCGDB2    DSNESPRR           DSNESM68 1999-01-15-11.30.24   G G G
    DSCGDB2  DSCGDB2    DSNEDCL            DSNECP68 1999-01-15-11.30.25   G G G
    DSCGDB2  DSCGDB2    DSNHYCRD           DSNHYCRD 1999-01-15-11.30.26   G G G
    DSCGDB2  DSCGDB2    DSNWZP             DSNWZP   1999-01-15-11.30.32   G G G
    DSCGDB2  DSCGDB2    DSNUTILS           DSNUTILS 1999-01-15-11.30.55   G G G
    DSCGDB2  PUBLIC     DSNUTILS           DSNUTILS 1999-01-15-11.32.48 S   Y
    DSCGDB2  DSNTEP61 P DSNTEP2            *        1999-01-15-13.47.50 S   Y
    DSCGDB2  DSNTEP2  P DSNTEP2            *        1999-01-15-13.47.50 S   Y
    DSCGDB2  DSCGDB2    DSNTEP2            DSN@EP2L 1999-01-15-13.45.31   G G G
    DSCGDB2  DSCGDB2    DSNTEP2            DSNTEP2  1999-01-15-13.47.50   G G G
    DSCGDB2  DSCGDB2    ADBL               ADBMAIN  1999-01-15-14.03.57   G G G
```

Figure 88. Package Authorizations Panel (ADB2AK)

The fields on this panel are:

SEL
Input field where you enter one of the line commands listed on the panel.

GRANTOR
Authorization ID of the user who granted the privilege.

GRANTEE
Authorization ID of the user who holds the privilege, or the name of the plan or package that uses the privilege.

GT
Type of grantee, which is one of the following:

Blank Authorization ID
P Plan

COLLECTION
Collection name for the packages.

PACKAGE NAME
Name of the package on which the privileges are held.

GRANT TIMESTAMP
Timestamp indicating when the privilege was granted.

HG
Authorization level of the user from whom the privileges were received. This field contains one of the following:

C	DBCTL
D	DBADM
L	SYSCTRL
M	DBMAINT
S	SYSADM

BD
Bind authorization, that is, whether the grantee can use BIND or REBIND commands against the package:

Y	The privilege is held without the GRANT option.
G	The privilege is held with the GRANT option.

EX
Execute authorization, that is, whether the grantee can execute the package:

Y	The privilege is held without the GRANT option.
G	The privilege is held with the GRANT option.

CO
Copy authorization, that is, whether the grantee can copy the package:

Y	The privilege is held without the GRANT option.
G	The privilege is held with the GRANT option.

Collection Authorizations Panel

This panel (Figure 89) appears when you select option LA on the DB2 System Catalog panel.

Use this panel to display the authorizations for collections in the DB2 catalog.

```
DB2 Admin -------------- DB2 Collection Authorizations ------------ Row 1 of 6
Command ===>                                                  Scroll ===> PAGE

Valid line commands are:
 R - Revoke  GR - Grant  L - Collection

                      G                    H                           C Pack
Sel Grantor  Grantee  T Collection         G Grant Timestamp           R Adm
    *        *        * *                  * *                         * *
--- -------- -------- - ------------------ - ------------------------- - -------
    DSCGDB2  ISTFL      ADBL               S 1999-01-19-13.09.48.5968 Y PACKADM
    DSCGDB2  ISTFL2     ADBL               S 1999-01-19-13.09.48.5968 Y PACKADM
    DSCGDB2  ISTJE      *                  S 1999-02-23-11.20.29.1155 Y
    DSCGDB2  ISTJE      *                  S 1999-02-23-11.20.00.7435 Y PACKADM
    DSCGDB2  ISTJE      ADBL               S 1999-01-19-13.09.48.5968 Y PACKADM
    DSCGDB2  ISTJE2     ADBL               S 1999-01-19-13.09.48.5968 Y PACKADM
****************************** END OF DB2 DATA *******************************
```

Figure 89. Collection Authorization Panel (ADB2AL)

The fields on this panel are:

SEL
Input field where you enter one of the line commands listed on the panel.

GRANTOR
Authorization ID of the user who granted the privilege.

GRANTEE
Authorization ID of the user who holds the privilege, or the name of the plan or package that uses the privilege.

GT
Type of grantee, which is one of the following:

Blank	Authorization ID
P	Plan

COLLECTION
Collection name.

HG
Authorization level of the user from whom the privileges were received. This field contains one of the following:

C	DBCTL
D	DBADM
L	SYSCTRL
M	DBMAINT

S SYSADM
P PACKADM (on a specific collection)
A PACKADM (on collection *)

GRANT TIMESTAMP
Timestamp indicating when the privilege was granted.

CR
If the PACKADM field that follows is blank, this field has the following meanings:

Y The grantee has the CREATE IN privilege without the GRANT option.
G The grantee has the CREATE IN privilege with the GRANT option.

If the PACKADM field contains PACKADM, this field has the following meanings:

Y The grantee has PACKADM authority without the GRANT option.
G The grantee has PACKADM authority with the GRANT option.

PACK ADM
The privilege level of the grantee. This field contains one of the following:

Blank The grantee has the CREATE IN privilege for the collection.
PACKADM Explained above.

Resource Authorizations Panel

This panel (Figure 90) appears when you select option RA on the DB2 System Catalog panel.

Use this panel to display the authorizations for resources in the DB2 catalog.

```
DB2 Admin --------------- DB2 Resource Authorizations ------------ Row 1 of 31
Command ===>                                                  Scroll ===> PAGE

Valid line commands are:
 R - Revoke  GR - Grant  G - Storage group  S - Table space  E - Data type
 I - Interpretation

                      G Quali-                          H O                        U
Sel Grantor  Grantee  T fier     Name                   G B Grant timestamp        A
    *        *        * *        *                      * * *                      *
--- -------- -------- - -------- ------------------ - - -------------------- -
    DSCGDB2  DSCGDB2              SYSDEFLT           S S 1999-01-15-11.30.35.2 G
    DSCGDB2  PUBLIC               BP1                S B 1999-01-15-11.32.48.4 Y
    DSCGDB2  PUBLIC               BP2                S B 1999-01-15-11.32.48.4 Y
    DSCGDB2  PUBLIC               SYSDEFLT           S S 1999-01-15-11.32.48.4 Y
    DSCGDB2  PUBLIC      DSNDB04  SYSDEFLT           S R 1999-01-15-11.32.48.4 Y
    DSCGDB2  DSCGDB2              DSN8G610           S S 1999-01-15-12.15.03.4 G
    DSCGDB2  PUBLIC               DSN8G610           S S 1999-01-15-12.17.15.3 Y
    DSCGDB2  PUBLIC      DSN8D61A DSN8S61D           S R 1999-01-15-12.17.15.4 Y
    DSCGDB2  PUBLIC      DSN8D61A DSN8S61E           S R 1999-01-15-12.17.15.4 Y
    DSCGDB2  PUBLIC      DSN8D61A DSN8S61P           S R 1999-01-15-12.17.15.4 Y
    DSCGDB2  PUBLIC      DSN8D61A DSN8S61S           S R 1999-01-15-12.17.15.4 Y
```

Figure 90. Resource Authorizations Panel (ADB2AR)

The fields on this panel are:

SEL
Input field where you enter one of the line commands listed on the panel.

GRANTOR
Authorization ID of the user who granted the privilege.

GRANTEE
Authorization ID of the user who holds the privilege, or the name of the plan or package that uses the privilege.

GT
Type of grantee, which is one of the following:

Blank	Authorization ID
P	Plan

QUALIFIER
Blank if the resource is a buffer pool or storage group. Database name if the resource is a table space.

NAME
Name of the storage group, table space, or buffer pool.

HG

Authorization level of the user from whom the privileges were received. This field contains one of the following:

C	DBCTL
D	DBADM
L	SYSCTRL
M	DBMAINT
S	SYSADM
P	PACKADM (on a specific collection)
A	PACKADM (on collection *)

OB

Type of object, which is one of the following:

B	Buffer pool
S	Storage group
R	Table space
C	Collection

GRANT TIMESTAMP

Timestamp indicating when the privilege was granted.

UA

Whether the privilege is held with the GRANT option.

Y	The privilege is held without the GRANT option.
G	The privilege is held with the GRANT option.

System Privileges Authorization Panel

This panel (Figure 91) appears when you select option ZA on the DB2 System Catalog panel.

Use this panel to display the authorizations for system privileges in the DB2 catalog.

```
DB2 Admin ---------- DB2 System Privileges Authorizations --------- Row 1 of 2
Command ===>                                                 Scroll ===> PAGE

Valid line commands are:
 R - Revoke  GR - Grant                    B B CREATE: D R S S S S S B T M M A
 I - Interpretation                        I S         I E T T Y Y Y I R O O R
                                           N D       A S C O O S S S N A N N C
                                           D S       L P O P S A C O D C 1 2 H
                                           A   D D   I L V A P D T P A E     I
                      G                  H D   B B S A A E L A M R R G       V
Sel Grantor  Grantee  T Grant timestamp  G D   A C G S Y R L C   L   T       E
    *        *        * *                * * * * * * * * * * * * * * * * * * * *
--- -------- -------- - ---------------- - - - - - - - - - - - - - - - - - - - -
    SYSIBM   SYSOPR     1985-04-01-00.00               G G G       G   G
    DSCGDB2  PUBLIC     1999-01-15-11.32 S Y   Y   Y Y Y     Y           Y Y
****************************** END OF DB2 DATA *******************************
```

Figure 91. System Privileges Authorizations Panel (ADB2AZ)

The fields on this panel are:

SEL
Input field where you enter one of the line commands listed on the panel.

GRANTOR
Authorization ID of the user who granted the privilege.

GRANTEE
Authorization ID of the user who holds the privilege, or the name of the plan or package that uses the privilege.

GT
Type of grantee, which is one of the following:

Blank Authorization ID
P Plan

GRANT TIMESTAMP
Timestamp indicating when the privilege was granted.

HG

Authorization level of the user from whom the privileges were received. This field contains one of the following:

C	DBCTL
D	DBADM
L	SYSCTRL
M	DBMAINT
S	SYSADM

BINDADD

Whether the grantee can issue the BIND command with the ADD option:

Y	The privilege is held without the GRANT option.
G	The privilege is held with the GRANT option.

BSDS

Whether the grantee can issue the RECOVER BSDS command:

Y	The privilege is held without the GRANT option.
G	The privilege is held with the GRANT option.

CREATE DBA

Whether the grantee can create databases and automatically receive DBADM authority over the new database:

Y	The privilege is held without the GRANT option.
G	The privilege is held with the GRANT option.

CREATE DBC

Whether the grantee can create databases and automatically receive DBCTRL authority over the new database:

Y	The privilege is held without the GRANT option.
G	The privilege is held with the GRANT option.

CREATE SG

Whether the grantee can execute the CREATE STOGROUP statement to create new storage groups:

Y	The privilege is held without the GRANT option.
G	The privilege is held with the GRANT option.

CREATE ALIAS

Whether the grantee can issue the CREATE ALIAS statement:

Y	The privilege is held without the GRANT option.
G	The privilege is held with the GRANT option.

DISPLAY

Whether the grantee can issue the DISPLAY commands:

Y	The privilege is held without the GRANT option.
G	The privilege is held with the GRANT option.

RECOVER

Whether the grantee can issue the RECOVER INDOUBT command:

Y	The privilege is held without the GRANT option.
G	The privilege is held with the GRANT option.

STOPALL
Whether the grantee can issue the STOP command:

Y The privilege is held without the GRANT option.
G The privilege is held with the GRANT option.

STOSPAC
Whether the grantee can use the STOSPACE utility:

Y The privilege is held without the GRANT option.
G The privilege is held with the GRANT option.

SYSADM
Whether the grantee has system administration authority:

Y The privilege is held without the GRANT option.
G The privilege is held with the GRANT option.

SYSCTRL
Whether the grantee has SYSCTRL authority:

Y The privilege is held without the GRANT option.
G The privilege is held with the GRANT option.

SYSOPR
Whether the grantee has system operator authority:

Y The privilege is held without the GRANT option.
G The privilege is held with the GRANT option.

BINDAGT
Whether the grantee has the BINDAGENT privilege:

Y The privilege is held without the GRANT option.
G The privilege is held with the GRANT option.

TRACE
Whether the grantee can issue the START TRACE and STOP trace commands:

Y The privilege is held without the GRANT option.
G The privilege is held with the GRANT option.

MON1
Whether the grantee can obtain IFC (Instrumentation Facility Component) serviceability data:

Y The privilege is held without the GRANT option.
G The privilege is held with the GRANT option.

MON2
Whether the grantee can obtain IFC data:

Y The privilege is held without the GRANT option.
G The privilege is held with the GRANT option.

ARCHIVE
Whether the grantee can issue the ARCHIVE LOG command:

Y The privilege is held without the GRANT option.
G The privilege is held with the GRANT option.

Schema Authorizations Panel

This panel (Figure 92) appears when you select option HA on the DB2 System Catalog panel.

Use this panel to display information about authorizations to the schema you have selected.

```
DB2 Admin ---------------- DB2X Schema Authorizations ------------- Row 1 of 3
Command ===>                                                   Scroll ===> PAGE

Valid line commands are:                                        C A D
 R - Revoke  GR - Grant  H - Schema                             R L R
 I - Interpretation                                             E T O
                                                              H A E P
Sel Grantor  Grantee  Schema   Grant timestamp                G T R
    *        *        *        *                              * * * *
--- -------- -------- -------- -------------------------- - - - -
    ISTJE    ISTJE2   ISTJE    1999-01-19-00.11.25.61746    Y
    DSCGDB2  ISTJE    XXX      1999-01-19-16.45.24.47184 S Y
    DSCGDB2  XXX      *        1999-02-04-16.05.12.08715 S Y
****************************** END OF DB2 DATA ******************************
```

Figure 92. Schema Authorizations Panel (ADB2AH)

The fields on this panel are:

SEL
Input field where you enter one of the line commands listed on the panel.

GRANTOR
Authorization ID of the user who granted the privilege.

GRANTEE
Authorization ID of the user who holds the privilege.

SCHEMA
Name of the schema or * for all schemas.

GRANT TIMESTAMP
Timestamp indicating when the privilege was granted.

HG
Authorization level of the user from whom the privileges were received. This field contains one of the following:

1 Grantor had privilege on all schemas at time of grant
L SYSCTRL
S SYSADM

CREATE
Whether the grantee can create UDFs, UDTs, triggers, or stored procedures in the schema.

ALTER
Whether the grantee can alter objects in the schema.

DROP
Whether the grantee can drop objects in the schema.

Data Type Authorizations Panel

This panel (Figure 93) appears when you select option EA on the DB2 System Catalog panel.

Note that the panel being used to display is the Resource Authorization Panel.

Use this panel to display information about authorizations to the data types you have selected.

```
DB2 Admin --------------- DB2 Resource Authorizations ------------- Row 1 of 1
Command ===>                                                  Scroll ===> PAGE

Valid line commands are:
 R - Revoke  GR - Grant  G - Storage group  S - Table space  E - Data type
 I - Interpretation

                     G Quali-                       H O                       U
Sel Grantor  Grantee T fier     Name                G B Grant timestamp       A
    *        *       * *        *                   * * *                     *
--- -------- -------- - -------- ------------------ - - --------------------- -
    ISTJE    XXXX       ISTJE    KR                   D 1999-02-18-16.39.20.8 G
****************************** END OF DB2 DATA *******************************
```

Figure 93. Data Type Authorizations Panel (ADB2AR)

The fields on this panel are:

SEL
Input field where you enter one of the line commands listed on the panel.

GRANTOR
Authorization ID of the user who granted the privilege.

GRANTEE
Authorization ID of the user who holds the privilege, or the name of the plan or package that uses the privilege.

GT
Type of grantee, which is one of the following:

' ' Authorization ID
P Plan

QUALIFIER
Blank if the resource is a buffer pool or storage group. Database name if the resource is a table space.

NAME
Name of the storage group, table space, or buffer pool.

HG
Authorization level of the user from whom the privileges were received. This field contains one of the following:

C	DBCTL
D	DBADM
L	SYSCTRL
M	DBMAINT
S	SYSADM
P	PACKADM (on a specific collection)
A	PACKADM (on collection *)

OB
Type of object, which is one of the following:

B	Buffer pool
S	Storage group
R	Table space
C	Collection
D	Distinct type (user-defined data type)

GRANT TIMESTAMP
Timestamp indicating when the privilege was granted.

UA
Authorization to use the resource, which is one of the following:

Y	Without the GRANT option
G	With the GRANT option

Function Authorizations Panel

This panel (Figure 94) appears when you select option FA on the DB2 System Catalog panel.

Use this panel to display the authorizations for the routines you have selected.

```
DB2 Admin ------------- DB2X Function Authorizations ------------- Row 1 of 44
Command ===>                                                  Scroll ===> PAGE

Valid line commands are:
 R - Revoke  GR - Grant  H - Schema  F - Function                          E
 I - Interpretation                                                        X
                                                    G                    H E
Sel Grantor  Grantee  Schema   Specific Name      T T Grant timestamp     G C
    *        *        *        *                  * * *                   * *
--- -------- -------- -------- ------------------ - - ------------------- - -
    ISTJE    ISTJE    ISTJE    KR_MINUS           F   1999-02-12-17.21.53   G
    ISTJE    ISTJE    ISTJE    SQL99011815222457A F   1999-01-18-15.22.28   G
    ISTJE    ISTJE    ISTJE    SQL99011815223541B F   1999-01-18-15.22.35   G
    ISTJE    ISTJE    ISTJE    SQL990208100338896 F   1999-02-08-10.03.41   G
    ISTJE    ISTJE    ISTJE    SQL990208160407659 F   1999-02-08-16.04.07   G
    ISTJE    ISTJE    ISTJE    SQL990208160407679 F   1999-02-08-16.04.07   G
    ISTJE    ISTJE    ISTJE    SQL990208160407699 F   1999-02-08-16.04.07   G
    ISTJE    ISTJE    ISTJE    SQL990208160413819 F   1999-02-08-16.04.13   G
    ISTJE    ISTJE    ISTJE    SQL990208160413829 F   1999-02-08-16.04.13   G
    ISTJE    ISTJE    ISTJE    SQL990208160424619 F   1999-02-08-16.04.24   G
    ISTJE    ISTJE    ISTJE    SQL990208160424639 F   1999-02-08-16.04.24   G
    ISTJE    ISTJE    ISTJE    SQL990208160424649 F   1999-02-08-16.04.25   G
```

Figure 94. Function Authorizations Panel (ADB2AO)

The fields on this panel are:

SEL
Input field where you enter one of the line commands listed on the panel.

GRANTOR
Authorization ID of the user who granted the privilege.

GRANTEE
Authorization ID of the user who holds the privilege, or the name of the plan or package that uses the privilege.

SCHEMA
Schema of the routine.

SPECIFIC NAME
Specific name of the routine or * for all routines in the schema.

T
Type of routine, which is one of the following:

F Function
P Stored procedure

GT
Type of grantee, which is one of the following:

' ' Authorization ID
P Plan or package

GRANT TIMESTAMP
Timestamp indicating when the privilege was granted.

HG
Authorization level of the user from whom the privileges were received. This field contains one of the following:

1 Grantor had privilege on schema
L SYSCTRL
S SYSADM

EXEC
Execute authorization, that is, whether the grantee can execute the routine.

Stored Procedure Authorizations Panel

This panel (Figure 95) appears when you select option OA on the DB2 System Catalog panel.

Use this panel to display the authorizations for the routines you have selected.

```
DB2 Admin ------------- DB2X Stored Procedure Authorizations ----- Row 1 of 12
Command ===>                                                    Scroll ===> PAGE

Valid line commands are:
 R - Revoke  GR - Grant  H - Schema  O - Stored Procedure                  E
 I - Interpretation                                                       X
                                                    G                   H E
Sel Grantor  Grantee  Schema   Specific Name      T T Grant timestamp     G C
    *        *        *        *                  * * *                   * *
--- -------- -------- -------- ------------------ - - ------------------- - -
    ADB      ADB      ADB      ADB2RE             P   1999-01-26-12.26.05   G
    DSCGDB2  DSCGDB2  DSN8     DSN8EP2            P   1999-01-15-14.34.55   G
    DSCGDB2  DSCGDB2  SYSPROC  DSNWZP            P   1999-01-15-11.31.07   G
    DSCGDB2  DSN8EP1  DSN8     DSN8EP2            P P 1999-01-15-14.40.50   Y
    DSCGDB2  ISTJE    DSCGDB2  *                  P   1999-01-25-13.58.30 S Y
    ISTJE    ISTJE    ISTJE    DUMMY              P   1999-02-04-17.37.06   G
    ISTJE    ISTJE    ISTJE    T1                 P   1999-02-10-17.04.38   G
    ISTJE    ISTJE    ISTJE    T2                 P   1999-02-09-09.43.40   G
    DSCGDB2  TADB2RE  ADB      ADB2RE             P P 1999-01-26-16.22.28 S Y
    DSCGDB2  TADB2RE  ADB      ADB2RE             P P 1999-01-27-09.52.08 S Y
    DSCGDB2  TADB2RE  ADB      ADB2RE             P P 1999-01-27-16.25.14 S Y
    DSCGDB2  TADB2RE  ADB      ADB2RE             P P 1999-01-27-16.26.47 S Y
```

Figure 95. Stored Procedure Authorizations Panel (ADB2AO)

The fields on this panel are:

SEL
Input field where you enter one of the line commands listed on the panel.

GRANTOR
Authorization ID of the user who granted the privilege.

GRANTEE
Authorization ID of the user who holds the privilege, or the name of the plan or package that uses the privilege.

SCHEMA
Schema of the routine.

SPECIFIC NAME
Specific name of the routine or * for all routines in the schema.

T
Type of routine, which is one of the following:

F Function
P Stored procedure

GT
Type of grantee, which is one of the following:

' ' Authorization ID
P Plan or package

GRANT TIMESTAMP
Timestamp indicating when the privilege was granted.

HG
Authorization level of the user from whom the privileges were received. This field contains one of the following:

1 Grantor had privilege on schema
L SYSCTRL
S SYSADM

EXEC
Execute authorization, that is, whether the grantee can execute the routine.

Chapter 7. Reverse Engineering Panels

The DB2 Admin reverse engineering function lets you reverse engineer the DB2 objects in your database catalog.

Reverse engineering generates the SQL statements necessary to re-create a DB2 object.

Typical uses for the DB2 Admin reverse engineering function include:

- Extracting the DDL for an object before changes are made, so that the changes are applied to the current definition and/or are available for fallback purposes.
- Moving DB2 objects to another DB2 subsystem. By using the reverse engineering function (together with the table unload and load functions), objects can be moved after a few manual modifications to the generated SQL and batch jobs.

When extracting database, table space, and table objects, all dependent objects can also be generated; this includes table spaces, tables, indexes, views, synonyms, aliases, referential contraints, table checks, and table triggers. When extracting objects in schemas, reverse engineering can extract the dependent distinct types, functions, and stored procedures. All authorizations to these objects can also be generated.

You can generate the SQL statements using a batch or online job. Batch jobs are recommended if DB2 Admin will be extracting many objects from a large catalog (see “Performance Tips” on page 145).

Using Reverse Engineering

The DB2 Admin reverse engineering function can be invoked from the:

- Databases panel (option 1.D, panel ADB21D)
- Table Spaces panel (option 1.S, panel ADB21S)
- Tables, Views, and Aliases panel (option 1.T, panel ADB21T)
- Schemas panel (option 1.H, panel ADB21H)
- Data (or Distinct) Types panel (option 1.E, panel ADB21E)
- Functions panel (option 1.F, panel ADB21F)
- Stored Procedures panel (option 1.O, panel ADB21O)

On these panels, use the *line* command GEN to reverse engineer one object (shown in Figure 96 on page 144), or use the *primary* command GEN to reverse engineer all the listed objects.

When you use the primary or line command GEN, DB2 Admin returns the Generate SQL from DB2 Catalog panel (Figure 97 on page 145). On this panel, you can:

- Specify which dependent objects you want DB2 Admin to generate.
- As an option, specify new values for the:
  - Storage group (possibly using a different storage group for table spaces and index spaces).
  - Database (except when initiated using a primary command from a list of databases).

- Specify a new object owner. If specified, the new owner is used whenever an object is created.
- Specify a new schema name (where applicable). If specified the new schema is used whenever an object is created.
- Specify the data set in which DB2 Admin should place the generated SQL.
- Specify whether the SQL generation should run as a batch or online job.
- Specify how often reverse engineering should add an SQL COMMIT statement to the generated SQL.
- Specify whether DB2 default parameters should be removed or kept in the generated SQL.

If you specify an execution mode of BATCH, DB2 Admin generates a batch job and displays the job in an ISPF edit session, ready for any modifications you need to make before submitting the job for execution. If you specify TSO, DB2 Admin generates the SQL statements online and displays the results.

```
DB2 Admin ------------------- DB2X Databases ---------------------- Row 1 of 4
Command ===>                                                  Scroll ===> PAGE

Valid line commands are:
 T - Tables  S - Table spaces  X - Indexes  G - Storage group  ICS - IC status
 DIS - Display database  STA - Start database  STO - Stop database  A - Auth
 ? - Show all line commands
                         Storage  Buffer          Created      Index
Select Name     Owner    Group    Pool       DBID By       T E Buffer Pool
       *        *        *        *        *      *        * * *
------ -------- -------- -------- -------- ------ -------- - - -----------
GEN    DSN8D61A DSCGDB2  DSN8G610 BP1         258 ISTJE      E BP2
       DSN8D61L DSCGDB2  DSN8G610 BP1         261 ISTJE      E BP2
       DSN8D61P DSCGDB2  DSN8G610 BP1         259 ISTJE      E BP2
       DSN8D61U DSCGDB2  DSN8G61U BP1         260 ISTJE      E BP2
****************************** END OF DB2 DATA ******************************
```

Figure 96. Databases Panel (ADB21D) - Reverse Engineering Example

```
DB2 Admin -------------- DB2X Generate SQL from DB2 Catalog ------------- 22:12
Option ===>

 Generate SQL statements for database DSN8D61A          DB2 System: DB2X
                                                        DB2 SQL ID: ISTJE

 SQL statement types to be generated from the DB2 catalog:
   CREATE DATABASE. . . . . : Y        GRANT access ON DATABASE. :  Y
   CREATE TABLESPACE. . . . : Y        GRANT access ON TABLESPACE:  Y
   CREATE TABLE . . . . . . : Y        GRANT access ON TABLE. . . : Y
   CREATE VIEW  . . . . . . : Y        GRANT access ON VIEW . . . : Y
   CREATE INDEX . . . . . . : Y        ALTER TABLE ADD FOREIGN KEY: Y
   CREATE SYNONYM . . . . . : Y        LABEL ON . . . . . . . . . : Y
   CREATE ALIAS . . . . . . : Y        COMMENT ON . . . . . . . . : Y
   CREATE TRIGGER . . . . . : Y

 New names/values for generated SQL: (leave blank to use current values)
   Object owner . . . . . :
   Alloc TS size as . . . . : DEFINED  (DEFINED, USED, or ALLOC)
   Database name. . . . . :
   Storage group for TS . . :          Storage group for IX . . . :
   Target DB2 version . . . :          (Current DB2 version: 610)

 Output file and execution mode:
   Data set name  . . . . . : TEST.DB2(X)
     Data set disposition . : OLD      (OLD, SHR, or MOD)
   Execution mode . . . . . : BATCH    (BATCH or TSO)
   Commit statements per  . : A        (Db, tS, Tb, All, None)
   DB2 defaults handling. . : K        (Keep, or Remove)

 BP - Change batch job parameters
```

Figure 97. Generate SQL from DB2 Catalog Panel (ADB2GEN)

Performance Tips

To improve performance of the ADB2GEN extract program, consider adding the following indexes to the DB2 catalog:

On SYSDBAUTH	(database(,grantor,grantee))
On SYSCHECKS	(tbowner,tbname)
On SYSRELS	(creator,tbname,relname
On SYSRESAUTH	(qualifier,name(,grantor,grantee,obtype))
On SYSTABAUTH	(tcreator,ttname(,grantor,grantee,granteetype))
On SYSCOLAUTH	(creator,tname(,dategranted,timegranted))

The recommended mode of operation is batch, even if only a few objects are requested. This is because the design for the extract process is based on the standard DB2 catalog indexes, which means that some parts of the process scan the catalog tables instead of doing a direct reference.

Considerations

The following considerations apply to reverse engineering:

- If you have specified a new owner for the objects to be reverse engineered and you have also requested that DB2 Admin generate dependent views, the CREATE VIEW statements are not changed to reflect the new owner of any tables, views, synonyms, or aliases. In this case, the CREATE VIEW statements are extracted unmodified from the catalog, and DB2 Admin issues a warning message.

  The CREATE VIEW statements will need to be modified manually to reflect the new owner of the objects.

- DB2 Admin does not extract IDCAMS DEFINE CLUSTER statements for VCAT-defined table spaces and indexes.

- The generated SQL for table spaces and indexes defined with a DSETPASS (password) will contain a SPUFI comment line like this:

  ```
  --      DSETPASS XXXXXXXX
  ```

  DB2 Admin does not reveal the data set password in the catalog; DB2 Admin generates the comment line and issues a warning message.

- The ability to generate actually allocated or actually used space allocations depends on information in the DB2 catalog. The actual data set sizes for table/index spaces are not retrieved. This means you should only use these options if you have recently run STOSPACE and RUNSTATS for the selected objects.

Sample Output

Figure 98 shows sample output from execution of the reverse engineering function.

```
------------------------------------------------------------------------
--                                                                    --
-- Database 2 Administration Tool (DB2 Admin), program 5645-DB2 (C)   --
--                                                                    --
-- ADB2GEN  -  Extract object definitions from the DB2 Catalog tables --
--                                                                    --
-- Input prepared on : DB2X (610)     Extract time : 1999-01-20 14:20 --
--                                                                    --
-- Catalog values overridden :                              --
--                                                                    --
--            Database=ISTJE61A  Stogroup (Table space)=ISTJEG        --
--            Creator =ISTJE     Stogroup (Index space)=ISTJEG        --
--                                                                    --
-- Generate : DB=Y TS=Y TB=Y VW=Y IX=Y SY=Y AL=Y LB=Y CM=Y FK=Y       --
-- Grants   : DB=Y TS=Y TB=Y VW=Y                                     --
--                                                                    --
------------------------------------------------------------------------
------------------------------------------------------------------------
--                                                                    --
-- ADB2GEN: Generate DDL for Database ISTJE61A                        --
--                                                                    --
------------------------------------------------------------------------
--
--
------------------------------------------------------------------------
-- Database=ISTJE61A   Stogroup=ISTJEG
------------------------------------------------------------------------
--
--
  CREATE DATABASE ISTJE61A
    BUFFERPOOL BP1
    CCSID      EBCDIC
    STOGROUP ISTJEG ;
--
  GRANT DBADM
    ON DATABASE ISTJE61A TO PUBLIC;
--
  COMMIT;
--
------------------------------------------------------------------------
-- Database=ISTJE61A   Stogroup=ISTJEG
-- Tablespace=ISTJE61A.DSN8S61D
------------------------------------------------------------------------
--
  CREATE TABLESPACE DSN8S61D
    IN ISTJE61A
    USING STOGROUP ISTJEG
    PRIQTY 20 SECQTY 20
    LOCKSIZE PAGE
    CLOSE NO ;
--
  GRANT USE OF TABLESPACE ISTJE61A.DSN8S61D TO PUBLIC;
--
  COMMIT;
--
```

Figure 98 (Part 1 of 2). Reverse Engineering Output

```
-------------------------------------------------------------------------
--    Table=ISTJE.DEPT                  In ISTJE61A.DSN8S61D
-------------------------------------------------------------------------
--
  CREATE TABLE ISTJE.DEPT
     (DEPTNO               CHAR(3) NOT NULL  ,
      DEPTNAME             VARCHAR(36) NOT NULL  ,
      MGRNO                CHAR(6)  ,
      ADMRDEPT             CHAR(3) NOT NULL  ,
      LOCATION             CHAR(16)  ,
      PRIMARY KEY (DEPTNO) )
    IN ISTJE61A.DSN8S61D ;
--
  COMMIT;
--
-------------------------------------------------------------------------
-- Database=ISTJE61A   Stogroup=ISTJEG
--    Index=ISTJE.XDEPT1                On ISTJE.DEPT
-------------------------------------------------------------------------
--
  CREATE TYPE 2 UNIQUE INDEX ISTJE.XDEPT1
    ON ISTJE.DEPT
     (DEPTNO                ASC )
    USING STOGROUP ISTJEG
    PRIQTY 12 SECQTY 12
    CLOSE NO ;
--
.
.
.
```

Figure 98 (Part 2 of 2). Reverse Engineering Output

Chapter 8. SQL Statements Panels

This chapter describes the SQL Statements panels. Using these panels you can:

- Issue any dynamic SQL statement from your screen or from a data set
- Build and execute an SQL SELECT statement interactively using line commands
- Execute the following SQL statements by filling in required parameters from a panel: GRANT, REVOKE, CREATE, DROP, LABEL ON, COMMENT ON.

  The two panels for this function are also used from the system catalog panels, where they are shown when a line command is issued against an object. When invoked in this way, the object names are filled with the object name from the catalog.

Execute SQL Statements Panel

This panel (Figure 99) appears when you select option 2 on the Administration Menu panel.

Use this panel to choose how you want to execute SQL statements.

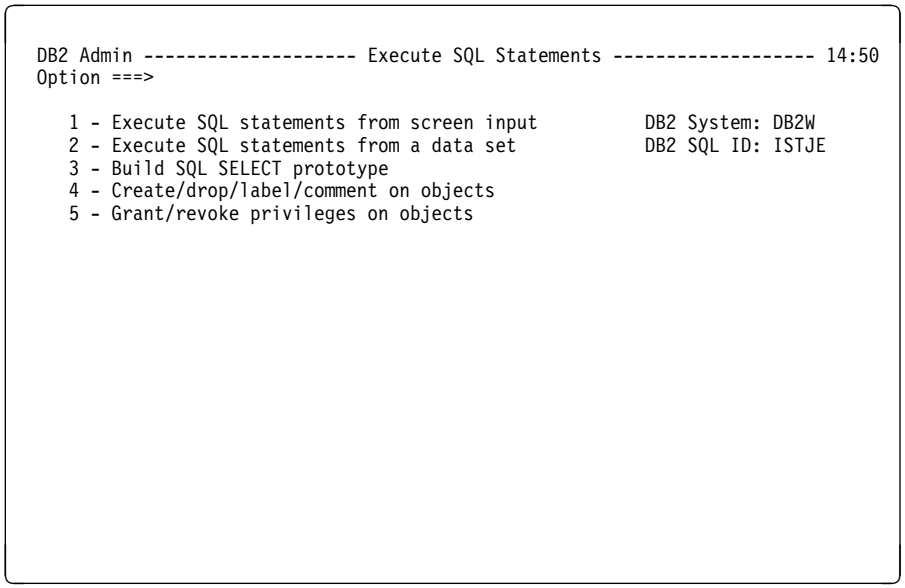


Figure 99. Execute SQL Statements Panel (ADB22)

EXECUTE SQL STATEMENTS FROM SCREEN INPUT
Select this option to execute SQL statements from your screen.

EXECUTE SQL STATEMENTS FROM A DATA SET
Select this option to execute SQL statements from a data set. You can edit the SQL statements using the ISPF editor, save the edited statements, and later execute them.

BUILD SQL SELECT PROTOTYPE
Select this option to build and execute an SQL SELECT statement. The SELECT statement is built interactively using line commands.

CREATE/DROP/LABEL/COMMENT ON OBJECTS
Select this option to execute one of the following SQL statements: CREATE, DROP, LABEL ON, or COMMENT ON.

GRANT/REVOKE PRIVILEGES ON OBJECTS
Select this option to execute GRANT and REVOKE SQL statements.

Execute SQL Statements from Screen Input Panel

This panel (Figure 100) appears when you select option 1 on the Execute SQL Statements panel.

Use this panel to enter SQL statements. Enter SQL statements free form. Separate each SQL statement with a semicolon (;). Execute an SQL statement by pressing ENTER. DB2 Admin executes SQL statements one at a time. Press ENTER to issue each SQL statement.

If an SQL SELECT statement returns rows, the result is shown on the default table display panel.

Note that you can edit an SQL statement by entering EDIT on the command line.

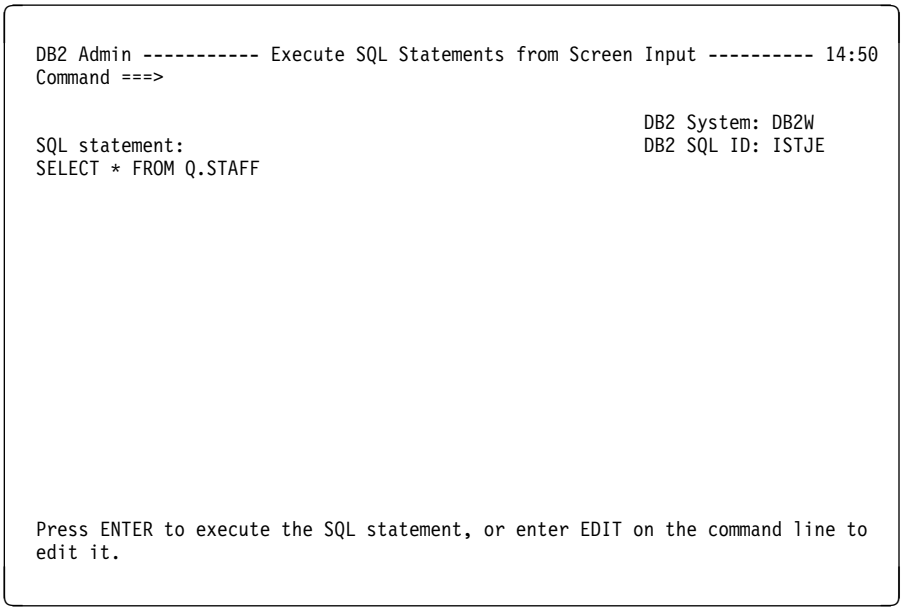


Figure 100. Execute SQL Statements from Screen Input Panel (ADB221)

Execute SQL Statements from a Data Set Panel

This panel (Figure 101) appears when you select option 2 on the Execute SQL Statements panel.

Use this panel to execute SQL statements from a data set.

If you specify YES for edit, the SQL statements are put in ISPF edit mode on the specified data set before they are executed. You can then edit the statements. Press END in the edit session to execute the SQL statements.

The input data set can be specified as:

- An ISPF library
- A partitioned or sequential data set
- A preallocated DD name

```
DB2 Admin ------------ Execute SQL Statements from a Data Set ----------- 14:50
Command ===>

                                                          DB2 System: DB2W
EDIT first ===> YES  (Yes or No)                          DB2 SQL ID: ISTJE

ISPF library:
   Project ===> ISTJE
   Group   ===> TEST      ===>           ===>           ===>
   Type    ===> DB2
   Member  ===> CTAB            (blank for member selection list)

Other partitioned or sequential data set:
   Data Set Name  ===>
   Volume Serial  ===>          (if not cataloged)

Alternative pre-allocated DD name:
   DD name ===>                 (use ddname(member) for members)
```

Figure 101. Execute SQL Statements from a Data Set Panel (ADB222)

Build SQL SELECT Prototype Panel

This panel (Figure 102) appears when you select option 3 on the Execute SQL Statements panel.

Use this panel to search for the object (table, view, or alias) for which you want to build and execute an SQL SELECT statement.

You begin building a SELECT statement by entering the CREATOR or NAME of the object. DB2 Admin displays a list of objects that match the search criteria. You then select the object for which you want to build a SELECT statement. Based on the line commands you specify for the object, DB2 Admin builds the SELECT statement. When you are satisfied with the statement, press ENTER to execute it.

You can use the EDIT command to capture the SELECT statement and store it elsewhere.

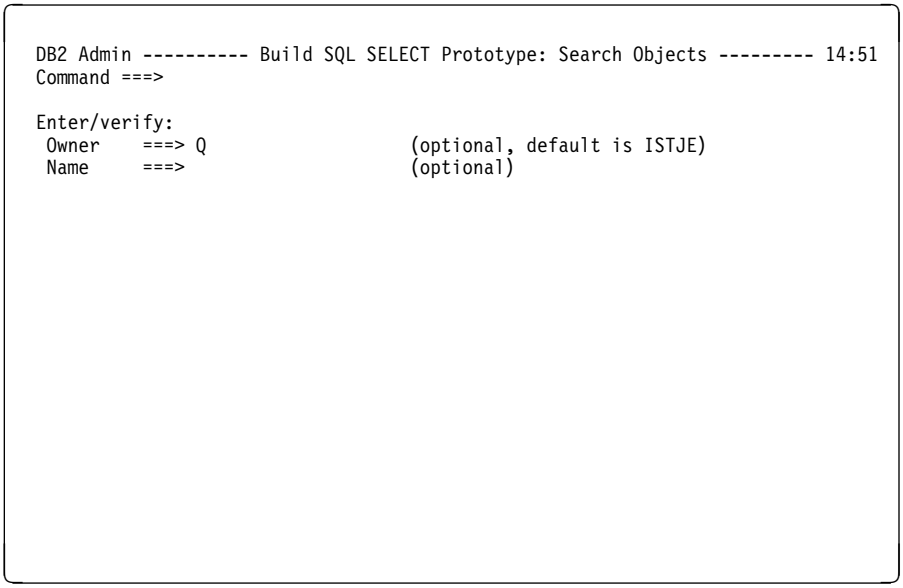


Figure 102. Build SQL SELECT Prototype Panel (ADB223)

Example of SQL SELECT Prototyping: An example of how you might build an SQL SELECT statement follows. In the example, you want to get the name and department number of all employees with a salary greater than $20,000. Begin by displaying a list of all the tables created by Q (see Figure 103). Then select the STAFF table using the SEL line command.

```
DB2 Admin ----------- DB2W Tables, Views, and Aliases -----  ROW 1 TO 23 OF 24
Command ===>                                                  Scroll ===> PAGE

Valid line commands are:
 SEL - Select for SQL SELECT prototype  T - Table

Select  Name               Creator  T
        *                  *        *
------- ------------------ -------- -
        OBJECT_DIRECTORY   Q        T
        OBJECT_REMARKS     Q        T
        OBJECT_DATA        Q        T
        RESOURCE_VIEW      Q        V
        RESOURCE_TABLE     Q        T
        ERROR_LOG          Q        T
        COMMAND_SYNONYMS   Q        T
        PROFILES           Q        T
        VPROFILE           Q        V
        SALES              Q        T
        PRODUCTS           Q        T
        APPLICANT          Q        T
SEL     STAFF              Q        T
```

Figure 103. Example of Building an SQL SELECT Statement (Part 1 of 5) (ADB223T)

Figure 104 shows the information DB2 Admin now returns. The partially built SQL statement is at the top of the panel.

```
DB2 Admin --------- DB2W Build SQL SELECT Prototype ---------  ROW 1 TO 7 OF 7
Command ===>                                                  Scroll ===> PAGE

SELECT ?
  FROM Q.STAFF T
  WHERE ?
  ORDER BY ?
Valid line commands are:
 S - Show  SA - Show ASC  SD - Show DESC  <operator><value> - WHERE cond.

Select            Column Name        Col Type
                  *                  *
----------------- ------------------ --------
                  ID                 SMALLINT
                  NAME               VARCHAR
                  DEPT               SMALLINT
                  JOB                CHAR
                  YEARS              SMALLINT
                  SALARY             DECIMAL
                  COMM               DECIMAL
****************************** END OF DB2 DATA ******************************
```

Figure 104. Example of Building an SQL SELECT Statement (Part 2 of 5) (ADB21TSE)

Using line commands, build the rest of the SELECT statement. As shown in Figure 105, you select name, department number, and salary greater than $20,000.

```
DB2 Admin --------- DB2W Build SQL SELECT Prototype ---------  ROW 1 TO 7 OF 7
Command ===>                                                  Scroll ===> PAGE

SELECT ?
  FROM Q.STAFF T
  WHERE ?
  ORDER BY ?
Valid line commands are:
 S - Show  SA - Show ASC  SD - Show DESC  <operator><value> - WHERE cond.

Select            Column Name        Col Type
                  *                  *
----------------- ------------------ --------
                  ID                 SMALLINT
S                 NAME               VARCHAR
S                 DEPT               SMALLINT
                  JOB                CHAR
                  YEARS              SMALLINT
>20000            SALARY             DECIMAL
                  COMM               DECIMAL
****************************** END OF DB2 DATA ******************************
```

Figure 105. Example of Building an SQL SELECT Statement (Part 3 of 5) (ADB21TSE)

The line commands shown in Figure 105 are now executed and, as a result, the SELECT statement is updated. An SD line command is also issued, which adds the ORDER clause to the SELECT statement. The result is shown in Figure 106.

```
DB2 Admin --------- DB2W Build SQL SELECT Prototype ---------  ROW 1 TO 7 OF 7
Command ===>                                                  Scroll ===> PAGE

SELECT NAME,DEPT,SALARY
  FROM Q.STAFF T
  WHERE SALARY>20000
  ORDER BY SALARY DESC
Valid line commands are:
 S - Show  SA - Show ASC  SD - Show DESC  <operator><value> - WHERE cond.

Select            Column Name        Col Type
                  *                  *
----------------- ------------------ --------
                  ID                 SMALLINT
*S                NAME               VARCHAR
*S                DEPT               SMALLINT
                  JOB                CHAR
                  YEARS              SMALLINT
*SD               SALARY             DECIMAL
                  COMM               DECIMAL
****************************** END OF DB2 DATA ******************************
```

Figure 106. Example of Building an SQL SELECT Statement (Part 4 of 5) (ADB21TSE)

The SQL statement is now ready to be executed. Do not specify any line commands when executing the statement. Figure 107 shows the result when you press ENTER.

```
DB2 Admin -------------- DB2 Result of the SQL SELECT -------  ROW 1 TO 6 OF 6
Command ===>                                                  Scroll ===> PAGE

L NAME        DEPT    SALARY
  *         *      *
- --------- ------ ---------
  MOLINARE      10  22959.20
  JONES         10  21234.00
  FRAYE         51  21150.00
  GRAHAM        66  21000.00
  HANES         15  20659.80
  LU            10  20010.00
****************************** END OF DB2 DATA ******************************
```

Figure 107. Example of Building an SQL SELECT Statement (Part 5 of 5) (ADB2DF)

Create/Drop/Label/Comment On Objects Panel

This panel (Figure 108) appears when you select option 4 on the Execute SQL Statements panel.

Use this panel as a quick way to issue the following SQL statements: CREATE, DROP, LABEL ON, and COMMENT ON.

```
DB2 Admin ---------- DB2X Create/Drop/Label/Comment On Objects ---------- 00:47
Option ===>

                                                                More:     +
                                                      DB2 System: DB2X
CREATE                                  DROP          DB2 SQL ID: ISXSTL
  CG  - Storage group                     DG  - Storage group
  CD  - Database                          DD  - Database
  CS  - Table space                       DS  - Table space
  CT  - Table                             DT  - Table
  CV  - View                              DV  - View
  CL  - Alias                             DL  - Alias
  CX  - Index                             DX  - Index
  CY  - Synonym                           DY  - Synonym
  CA  - Auxiliary table
  CE  - Distinct type                     DE  - Distinct type
  CJ  - Trigger                           DJ  - Trigger
  CF  - Function                          DF  - Function
  CU  - Stored procedure                  DU  - Stored procedure

LABEL                                   COMMENT (remark)
  LT  - Table/view                        RT  - Table
  LL  - Alias                             RL  - Alias
  LC  - Column                            RC  - Column
                                          RE  - Distinct type
                                          RF  - Function
```

Figure 108. Create/Drop/Label/Comment On Objects Panel (ADB26)

Grant or Revoke Privileges On Objects Panel

This panel (Figure 109) appears when you select option 5 on the Execute SQL Statements panel.

Use this panel as a quick way to issue the GRANT and REVOKE SQL statements.

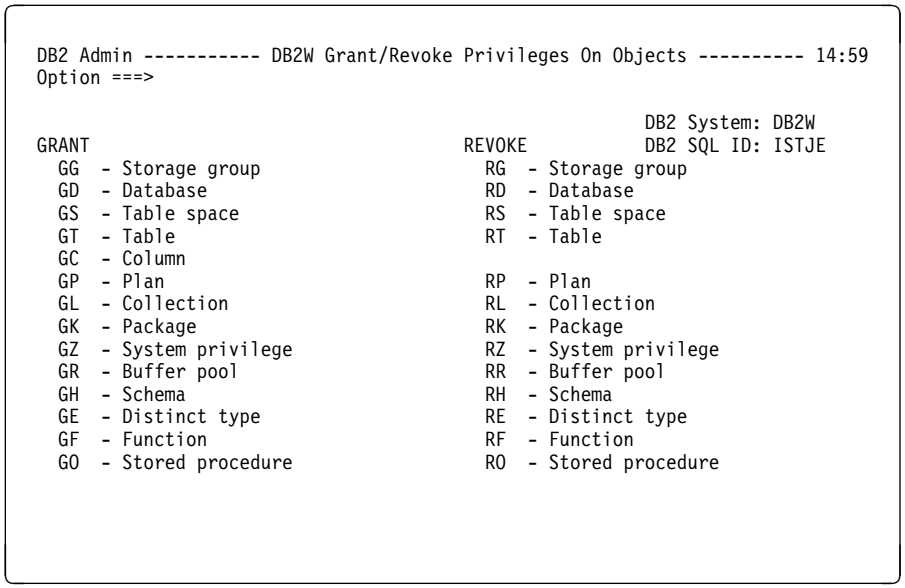


Figure 109. Grant or Revoke Privileges On Objects Panel (ADB2G)

Chapter 9. DB2 Performance Queries Panels

This chapter describes the performance queries panels.

Figure 110 appears when you select option 3 on the Administration Menu panel. Use this panel to select the DB2 performance and space utilization query you want to run. Select an option, and enter (part of) the name of the database for which the query should be run. See the descriptions that appear on each panel in this chapter for more information about each option shown in Figure 110.

The select field on the performance queries panels lets you select an object, which is then shown on the corresponding system catalog panel. This lets you further investigate problems or choose to run utilities such as REORG and RUNSTATS.

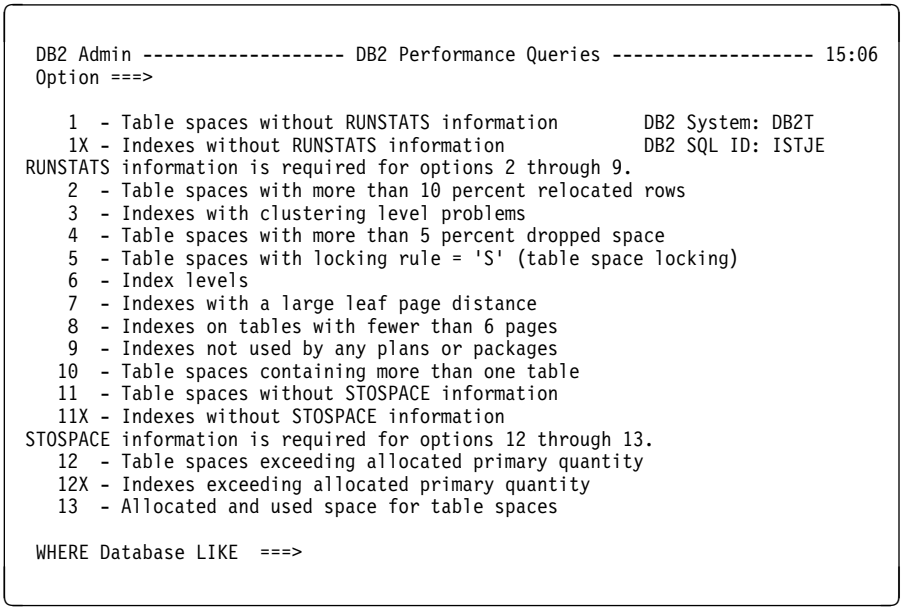


Figure 110. DB2 Performance Queries Panel (ADB23)

Table Spaces Without RUNSTATS Information Panel

This panel (Figure 111) appears when you select option 1 on the DB2 Performance Queries panel.

```
DB2 Admin ---- DB2 Table Spaces Without RUNSTATS In  ROW 981 TO 1,000 OF 1,000
Command ===>                                                  Scroll ===> PAGE

The following table spaces do not have RUNSTATS information. Consider running
the RUNSTATS utility on them.

Valid line commands are:
 S - Select

Select Name     Owner    DB Name  BP   L E S I C Ntable    N Active       Space
       *        *        *        *    * * * * * *      *           *
------ -------- -------- -------- ---- - - - - - ------ ----------- -----------
       RGESI24S RGET     RGED001  BP0  P N A N N       1           0           0
       RGESI26S RGET     RGED001  BP0  P N A N N       1           0           0
       RGESMDAS RGET     RGED001  BP0  P N A N N       1           0           0
       RGESM01S RGET     RGED001  BP0  P N A N N       1           0           0
       RGESM02S RGET     RGED001  BP0  P N A N N       1           0           0
       RGESOEGS RGET     RGED001  BP0  P N A N N       1           0           0
       RGESOEIS RGET     RGED001  BP0  P N A N N       1           0           0
       RGESOE0S RGET     RGED001  BP0  P N A N N       1           0           0
       RGESOR1S RGET     RGED001  BP0  P N A N N       1           0           0
       RGESOS1S RGET     RGED001  BP0  P N A N N       1           0           0
```

Figure 111. Table Spaces Without RUNSTATS Information Panel (ADB231)

The fields on this panel are:

SELECT
Input field where you enter "S" to select an item.

NAME
Name of the table space.

OWNER
Authorization ID of the owner of the table space.

DB NAME
Name of the database.

BP
Name of the buffer pool used for the table space.

L Locking size, which is one of the following:

A Any
P Page
S Table space

E Erase rule, which is one of the following:

Y Erase
N No erase

S Status of the table space, which is one of the following:

A Available
N Not available

I Implicit (whether the table space was created implicitly), which is one of the following:

Y Yes
N No

C Close rule, which is one of the following:

Y Yes
N No

NTABLE
Number of tables defined in the table space.

N ACTIVE
Number of active pages in the table space. This field is 0 if the RUNSTATS utility has not been run.

SPACE
Kilobytes (KB) of storage allocated to the table space. This field is 0 if the STOSPACE utility has not been run.

Indexes Without RUNSTATS Information Panel

This panel (Figure 112) appears when you select option 1X on the DB2 Performance Queries panel.

```
DB2 Admin --------- DB2 Indexes Without RUNSTATS Info ----- ROW 1 TO 19 OF 176
Command ===>                                                  Scroll ===> PAGE

The following indexes do not have RUNSTATS information. Consider running the
RUNSTATS utility on the indexes or on the table spaces using INDEX(ALL).

Valid line commands are:
 S - Select

                      Index                       Table
S Index Name          Owner    Table Name         Owner
  *                   *        *                  *
- ------------------ -------- ------------------ --------
  D54TCIDX            RGET     D54TCID            RGET
  RGE0I20S            RGET     RGETI20S           RGET
  RGE1CACS            RGET     RGETCACS           RGET
  RGE1CADS            RGET     RGETCADS           RGET
  RGE1CAES            RGET     RGETCAES           RGET
  RGE1CAFS            RGET     RGETCAFS           RGET
  RGE1CAGS            RGET     RGETCAGS           RGET
  RGE1CAHS            RGET     RGETCAHS           RGET
  RGE1C1AS            RGET     RGETC1AS           RGET
```

Figure 112. Indexes Without RUNSTATS Information Panel (ADB231X)

The fields on this panel are:

S Input field where you enter "S" to select an item.

INDEX NAME
Name of the index.

INDEX OWNER
Authorization ID of the owner of the index.

TABLE NAME
Name of the table on which the index is defined.

TABLE OWNER
Authorization ID of the owner of the table.

Table Spaces With More Than Ten Percent Relocated Rows Panel

This panel (Figure 113) appears when you select option 2 on the DB2 Performance Queries panel.

```
DB2 Admin ---- DB2 Table Spaces with Relocated Rows > 10 Pct   ROW 1 TO 1 OF 1
Command ===>                                                  Scroll ===> PAGE

The following table spaces have more than 10 percent relocated rows, that is,
rows that are not located in their original page. Consider reorganizing the
table spaces or redesigning the programs that update the rows.

Valid line commands are:
 S - Select

  DB       TS                   Near         Far        Percent
S Name     Name        Part    Org Page    Org Page   Relocated        Card
  *        *         *      *           *           *           *
- -------- --------- ------ ----------- ----------- ----------- -----------
  ISTJE2D  ISTJE2S        0         196           0          80         245
****************************** END OF DB2 DATA *******************************
```

Figure 113. Table Spaces With More Than Ten Percent Relocated Rows Panel (ADB232)

The fields on this panel are:

S Input field where you enter "S" to select an item.

DB NAME
Name of the database.

TS NAME
Name of the table space.

PART
Partition number.

NEAR ORG PAGE
Number of rows that have been relocated near their original page.

FAR ORG PAGE
Number of rows that have been relocated far from their original page.

PERCENT RELOCATED
Percent of rows that have been relocated.

CARD
Number of rows in the table space or partition.

Indexes With Clustering Level Problems Panel

This panel (Figure 114) appears when you select option 3 on the DB2 Performance Queries panel.

```
DB2 Admin ---------- Indexes with Clustering Level Problems -  ROW 1 TO 6 OF 6
Command ===>                                                  Scroll ===> PAGE

The following indexes have clustering level problems. 'F.O.P TOO BIG' indicates
that the number of rows in a far offset position is greater than 10 percent.
'CLUSTERED xx' indicates that the index was defined as clustering but RUNSTATS
found the clustering ratio to be less than 95 percent. Consider reorganizing
the table spaces or redesigning your indexes, tables, and/or programs. Things
to consider are insert/update/delete patterns and frequencies, freespace/reorg
frequencies, and clustering sequences.

Valid line commands are:
 S - Select

                     Index     Pct in Far
S Index Name         Owner     Offset Pos Clustering Clustered Comment
  *                  *        *           *          *         *
- ------------------ -------- ----------- ---------- --------- ----------------
  VUP0XCSD           D031TEST           19 Y          N         F.O.P TOO BIG
  VUP5XCSD           D031TEST           23 Y          N         F.O.P TOO BIG
  VUPEXCSD           D031TEST            0 Y          N         CLUSTERED 95%
  VUPFXCSD           D031TEST            0 Y          N         CLUSTERED 84%
```

Figure 114. Indexes With Clustering Level Problems Panel (ADB233)

The fields on this panel are:

S Input field where you enter "S" to select an item.

INDEX NAME
Name of the index.

INDEX OWNER
Authorization ID of the owner of the index.

PCT IN FAR OFFSET POS
Percent of rows in a far offset position because of an insert into a full page.

CLUSTERING
Whether CLUSTER was specified when the index was created.

CLUSTERED
Whether the table is actually clustered by the index.

COMMENT
Reason why the index appears in the list.

Table Spaces With Dropped Space Greater Than Five Percent Panel

This panel (Figure 115) appears when you select option 4 on the DB2 Performance Queries panel.

```
DB2 Admin --- DB2 Table Spaces with More Than 5 Pct Dropped S  ROW 1 TO 9 OF 9
Command ===>                                                  Scroll ===> PAGE

The following table spaces have more than 5 percent dropped space. When a table
is dropped from a table space, the space it occupied cannot be reused. If the
percent of dropped space is significant, you should consider reorganizing the
table spaces and/or using segmented table spaces for the tables.

Valid line commands are:
 S - Select
                          Percent                  Primary Secondary
S DB Name  TS Name     Part Dropped        Card    Quantity  Quantity
  *        *         *       *      *           *           *
- -------- --------- ------ ------- ----------- ----------- ---------
  DSQ1STBB DSQ1STBT       0      10         135         100         5
  D208D001 D208SPRF       0      17         437           3         3
  D475D001 D475S088       0      94        8552          88        13
  D154D400 D154STPS       0      24         170           3         2
  D154D500 D154STEA       0      12           7         125         3
  D922D01  D922SINC       0      10          72           3         3
  JFDDBO1  JFDSO4         0      39        1201         984       120
  JFDDBO1  JFDSO5         0      20        2621        2280       240
```

Figure 115. Table Spaces With Dropped Space Greater Than Five Percent Panel (ADB234)

The fields on this panel are:

S Input field where you enter "S" to select an item.

DB NAME
Name of the database.

TS NAME
Name of the table space.

PART
Partition number. This field contains zero if the table space is not partitioned.

PERCENT DROPPED
Percent of space occupied by dropped tables.

CARD
Number of rows in the table space or partition.

PRIMARY QUANTITY
Primary space allocation in 4K blocks of storage.

SECONDARY QUANTITY
Secondary space allocation in 4K blocks of storage.

DB2 Table Spaces With Locking Rule = 'S' Panel

This panel (Figure 116) appears when you select option 5 on the DB2 Performance Queries panel.

```
DB2 Admin --------- DB2 Table Spaces with Locking Rule   ROW 102 TO 117 OF 149
Command ===>                                               Scroll ===> PAGE

The following table spaces have locking rule = 'S'. DB2 will use table space
locking when accessing a table in the table space. You probably only want
locking rule = 'S' for read-only tables or tables that are accessed by only one
user (or batch job) at a time. Consider changing the locking rule to 'A' (any
locking), for example, by altering the locksize with an ALTER SQL statement.

Valid line commands are:
 S - Select
                      Lock Number of
S DB Name  TS Name    Rule    Tables
  *        *          *     *
- -------- --------- ---- ---------
  D402D10  D402SCIF    S          1
  D402D10  D402STIF    S          1
  D455D005 KBBSCOM     S          1
  D455D005 KBBSCTAB    S          1
  D455D005 KBBSIMS1    S          1
  D455D005 KBBSPRO     S          1
  D455D005 KBBSAPP     S          1
```

Figure 116. DB2 Table Spaces With Locking Rule = 'S' Panel (ADB235)

The fields on this panel are:

S Input field where you enter "S" to select an item.

DB NAME
Name of the database.

TS NAME
Name of the table space.

LOCK RULE
Lock size of the table space.

NUMBER OF TABLES
Number of tables defined in the table space.

Index Levels Panel

This panel (Figure 117) appears when you select option 6 on the DB2 Performance Queries panel.

```
DB2 Admin ---------------------- Index Levels ----------  ROW 62 TO 76 OF 279
Command ===>                                               Scroll ===> PAGE

This panel shows the number of index levels. If the number exceeds 2 or 3, it
might have a negative impact on the performance of your application programs.
You might consider reorganizing the indexes more often or redesigning the
indexes and tables. Things to consider are key lengths, free space, and
insert/delete/update patterns and frequencies.

Valid line commands are:
 S - Select

                     Index                       Table    Index
S Index Name         Owner    Table Name         Owner    Levels
  *                  *        *                  *        *
- ------------------ -------- ------------------ -------- ------
  KAFX2002           KAFT     KAFT20             KAFT          2
  KAFX2003           KAFT     KAFT20             KAFT          2
  KAFX2102           KAFT     KAFT21             KAFT          2
  KAFX2101           KAFT     KAFT21             KAFT          2
  KAFX2202           KAFT     KAFT22             KAFT          3
  KAFX2201           KAFT     KAFT22             KAFT          3
```

Figure 117. Index Levels Panel (ADB236)

The fields on this panel are:

S Input field where you enter "S" to select an item.

INDEX NAME
Name of the index.

INDEX OWNER
Authorization ID of the owner of the index.

TABLE NAME
Name of the table on which the index is defined.

TABLE OWNER
Authorization ID of the owner of the table.

INDEX LEVELS
Number of levels in the index tree.

Indexes With a Large Leaf Page Distance Panel

This panel (Figure 118) appears when you select option 7 on the DB2 Performance Queries panel.

```
DB2 Admin --------- Indexes with a Large Leaf Page Distance  ROW 1 TO 15 OF 76
Command ===>                                                  Scroll ===> PAGE

The following indexes have a large leaf page distance (>150). The leaf distance
is defined as: 100 times the average number of pages between successive leaf
pages of the index. If this value exceeds 200, consider reorganizing the index.
You might also consider redesigning the indexes. Things to consider are
freespace/reorg frequencies and insert/update/delete patterns and frequencies.

Valid line commands are:
 S - Select

                     Index                              Table           Leaf
S Index Name         Owner      Part Table Name         Owner       Distance
  *                  *        *      *                *        *
- ------------------ -------- ------ ------------------ -------- -----------
  KBDXNA             D455MAST      0 KBDTNA             D455MAST        1109
  KBDXES             D463MAST      0 KBDTES             D463MAST        3777
  KBDXEV             D463MAST      0 KBDTEV             D463MAST       25132
  KBDXITI            D463MAST      0 KBDTITI            D463MAST        1355
  KBDXITR            D463MAST      0 KBDTITR            D463MAST       11802
  KBDXOTC            D463MAST      0 KBDTOTC            D463MAST        1342
```

Figure 118. Indexes With a Large Leaf Page Distance Panel (ADB237)

The fields on this panel are:

S Input field where you enter "S" to select an item.

INDEX NAME
Name of the index.

INDEX OWNER
Authorization ID of the owner of the index.

PART
Partition number; 0 if index is not partitioned.

TABLE NAME
Name of the table on which the index is defined.

TABLE OWNER
Authorization ID of the owner of the table.

LEAF DISTANCE
One hundred times the average number of leaf pages between successive active leaf pages of the index.

Indexes On Tables With Less Than Six Pages Panel

This panel (Figure 119) appears when you select option 8 on the DB2 Performance Queries panel.

```
DB2 Admin ------- Indexes on Tables with Fewer Than 6 Pages  ROW 1 TO 18 OF 35
Command ===>                                                  Scroll ===> PAGE

The following nonunique indexes are defined on tables that have less than 6
pages. Such indexes do not improve performance and should probably be dropped.

Valid line commands are:
 S - Select

                      Index                          Table           Table
S Index Name          Owner     Table Name           Owner           Pages
  *                   *         *                    *         *
- ------------------- -------- ------------------- -------- -----------
  KAFX0902            KAFT      KAFT09              KAFT               1
  KAFX1002            KAFT      KAFT10              KAFT               1
  KAFX1202            KAFT      KAFT12              KAFT               1
  KAFX1302            KAFT      KAFT13              KAFT               1
  KAFX1503            KAFT      KAFT15              KAFT               2
  KAFX1502            KAFT      KAFT15              KAFT               2
  KAFX3202            KAFT      KAFT32              KAFT               2
  KAFX3404            KAFT      KAFT34              KAFT               1
  KAFX3402            KAFT      KAFT34              KAFT               1
```

Figure 119. Indexes On Tables With Less Than Six Pages Panel (ADB238)

The fields on this panel are:

S Input field where you enter "S" to select an item.

INDEX NAME
Name of the index.

INDEX OWNER
Authorization ID of the owner of the index.

TABLE NAME
Name of the table on which the index is defined.

TABLE OWNER
Authorization ID of the owner of the table.

TABLE PAGES
Total number of pages on which rows of the table appear.

Indexes Not Used By Any Plans or Packages Panel

This panel (Figure 120) appears when you select option 9 on the DB2 Performance Queries panel.

```
DB2 Admin --- Indexes Not Used by Any Plan or Package -- ROW 49 TO 65 OF 1,000
Command ===>                                                 Scroll ===> PAGE

The following indexes are not used by any plan or package with static SQL.
Consider dropping the index if it is not used in QMF or any other dynamic SQL
statement.

Valid line commands are:
 S - Select

                     Index                       Table
S Index Name         Owner    Table Name         Owner
  *                  *        *                  *
- ------------------ -------- ------------------ --------
  D250XACT           D250TEST D250TACT           D250TEST
  D250XBAS           D250TEST D250TBAS           D250TEST
  D253IADR           D253TEST D253TADR           D253TEST
  D253ICPR           D253TEST D253TCPR           D253TEST
  D253XCAM           D253TEST D253TCAM           D253TEST
  D253XCON           D253TEST D253TCON           D253TEST
  D253XCPE1          D253TEST D253TCPE           D253TEST
  D253XCPE2          D253TEST D253TCPE           D253TEST
```

Figure 120. Indexes Not Used By Any Plans or Packages Panel (ADB239)

The fields on this panel are:

S Input field where you enter "S" to select an item.

INDEX NAME
Name of the index.

INDEX OWNER
Authorization ID of the owner of the index.

TABLE NAME
Name of the table on which the index is defined.

TABLE OWNER
Authorization ID of the owner of the table.

Table Spaces Containing More Than One Table Panel

This panel (Figure 121) appears when you select option 10 on the DB2 Performance Queries panel.

```
DB2 Admin ----- Table Spaces Containing More Than One Table   ROW 1 TO 8 OF 30
Command ===>                                                 Scroll ===> PAGE

The following nonsegmented table spaces contain more than one table. In most
cases, nonsegmented table spaces should only contain one table. Unless you
have good reasons for having more than one table per table space (for example,
you want to cluster small read-only tables in one table space), consider moving
the tables to separate table spaces.

Valid line commands are:
 S - Select
                      Number of
S DB Name  TS Name    Tables
  *        *            *
- -------- --------- ---------
  CQEDDCTL CQETSYYN          2
  CQEDSTBL CQESSTBL          9
  D512DTBE D512IS2           2
  DSNDB04  TRACETS           2
  LBSD003  LBSSPAY           2
  DQX1STBB DQXTSTBT          3
  DQX1STBB DQXTSTLL          4
```

Figure 121. Table Spaces Containing More Than One Table Panel (ADB2310)

The fields on this panel are:

S Input field where you enter "S" to select an item.

DB NAME
Name of the database.

TS NAME
Name of the table space.

NUMBER OF TABLES
Number of tables defined in the table space.

Table Spaces Without STOSPACE Information Panel

This panel (Figure 122) appears when you select option 11 on the DB2 Performance Queries panel.

```
DB2 Admin ------ Table Spaces Without STOSPACE Information   ROW 1 TO 10 OF 58
Command ===>                                                  Scroll ===> PAGE

The following table spaces do not have STOSPACE information, that is, the
STOSPACE utility, which collects ICF catalog statistics for a STOGROUP and
stores this information in the DB2 catalog, has not been run.  Consider running
the STOSPACE utility on the storage group(s) on a periodic basis.

Valid line commands are:
 S - Select
                              Storage  VSAM
S DB Name  TS Name     Part Group    Catalog
  *        *          *    *        *
- -------- --------- ------ -------- --------
  BKDD001  BKDSTCW        0 BKDGS01  ISDB2T
  BKDD001  BKDSTGW        0 BKDGS01  ISDB2T
  BKDD001  BKDSETW        0 BKDGS01  ISDB2T
  BKDD001  BKDSEVW        0 BKDGS01  ISDB2T
  BKDD001  BKDSRQW        0 BKDGS01  ISDB2T
  BKDD001  BKDSENW        0 BKDGS01  ISDB2T
  GRED001  GRESCACS       0 GREG001  ISDB2T
  D455D004 D455SUNA       0 D455G004 ISDB2T
```

Figure 122. Table Spaces Without STOSPACE Information Panel (ADB2311)

The fields on this panel are:

S Input field where you enter "S" to select an item.

DB NAME
Name of the database on which the table space resides.

TS NAME
Name of the table space.

PART
Partition number (zero if not partioned).

STORAGE GROUP
Name of the storage group for the table space.

VSAM CATALOG
Name of the catalog used for space allocation.

Indexes Without STOSPACE Information Panel

This panel (Figure 123) appears when you select option 11X on the DB2 Performance Queries panel.

```
DB2 Admin ----------- Indexes Without STOSPACE Information   ROW 1 TO 10 OF 78
Command ===>                                                  Scroll ===> PAGE

The following indexes do not have STOSPACE information, that is, the STOSPACE
utility, which collects ICF catalog statistics for a STOGROUP and stores this
information in the DB2 catalog, has not been run. Consider running the STOSPACE
utility on the storage group(s) on a periodic basis.

Valid line commands are:
 S - Select
                      Index           Storage  VSAM
S Index Name          Owner      Part Group    Catalog
  *                   *        *    *        *
- ------------------ -------- ------ -------- --------
  BKDXTCW             D463MAST      0 BKDGX01  ISDB2T
  BKDXTC2W            D463MAST      0 BKDGX01  ISDB2T
  BKDXTGW             D463MAST      0 BKDGX01  ISDB2T
  BKDXTG2W            D463MAST      0 BKDGX01  ISDB2T
  BKDXETW             D463MAST      0 BKDGX01  ISDB2T
  BKDXEVW             D463MAST      0 BKDGX01  ISDB2T
  BKDXRQW             D463MAST      0 BKDGX01  ISDB2T
  BKDXRQ2W            D463MAST      0 BKDGX01  ISDB2T
```

Figure 123. Indexes Without STOSPACE Information Panel (ADB2311X)

The fields on this panel are:

S Input field where you enter "S" to select an index.

INDEX NAME
Name of the index.

INDEX OWNER
Authorization ID of the owner of the index.

PART
Partition number (zero for nonpartitioned indexes).

STORAGE GROUP
Name of the storage group for the table space.

VSAM CATALOG
Name of the catalog used for space allocation.

Table Spaces Exceeding Allocated Primary Quantity Panel

This panel (Figure 124) appears when you select option 12 on the DB2 Performance Queries panel.

```
DB2 Admin ---- Table Spaces Exceeding Alloc Primary Quantity ROW 1 TO 9 OF 243
Command ===>                                                  Scroll ===> PAGE

The following table spaces exceed the allocated primary quantity. Consider
extending the primary allocation.

Note: If the primary or secondary quantity of 4K pages is less than the track
capacity for 4K blocks, then the number of extents shown is too high.

Valid line commands are:
 S - Select
                             Primary Qty   Sec  Allocated  Pct Alloc
S DB Name  TS Name     Part (4K pages)    Qty  (4K pages) of Prim Qty    Ext
  *        *         *      *           *      *           *           *
- -------- --------- ------ ----------- ------ ----------- ----------- -----
  EANDUSR  EANSU07        0        1500    150        1560         104     2
  EANDUSR  EANSU08        0        1500    150        1560         104     2
  EANDUSR  EANSU09        0        1500    150        1560         104     2
  EANDW01  EANSWOR        0        1500    500        1620         108     2
  EANDW01  EANSWRE        0        1500    500        1620         108     2
  EANDW01  EANSWRL        0        2500    750        2520         100     2
  EAND101  EANS1AD        0        3000    300        3060         102     2
```

Figure 124. Table Spaces Exceeding Allocated Primary Quantity Panel (ADB2312)

The fields on this panel are:

S Input field where you enter "S" to select a table space.

DB NAME
Name of the database.

TS NAME
Name of the table space.

PART
Partition number (zero if not partitioned).

PRIMARY QTY (4K PAGES)
Primary space allocation in 4K blocks of storage.

SEC QTY
Secondary space allocation in 4K blocks of storage.

ALLOCATED (4K PAGES)
Space allocated in 4K blocks of storage.

PCT ALLOC OF PRIM QTY
Percent of the primary quantity of space that is allocated.

EXT
Estimated number of extents of the table space.

Indexes Exceeding Allocated Primary Quantity Panel

This panel (Figure 125) appears when you select option 12X on the DB2 Performance Queries panel.

```
DB2 Admin ------- Indexes Exceeding Alloc Primary Quantity   ROW 1 TO 9 OF 251
Command ===>                                                  Scroll ===> PAGE

The following indexes exceed the allocated primary quantity. Consider extending
the primary allocation.

Note: If the primary or secondary quantity of 4K pages is less than the track
capacity for 4K blocks, then the number of extents shown is too high.

Valid line commands are:
 S - Select
  Index              Index           Prim Qty Sec Q  Allocated  Pct Alloc
S Name               Owner      Part (4K pgs)  (4K)  (4K pages) of Prim Q   Ext
  *                  *        *      *        *      *          *         *
- ------------------ -------- ------ -------- ------ ---------- --------- -----
  BKAXINC0           BKAT          1      250     25        288       115     3
  BKAXINC0           BKAT          2      225     23        240       106     2
  BKAXINC3           BKAT          0     1225    123       1320       107     2
  BKAXINC4           BKAT          0     3325    333       3420       102     2
  BKAXINC5           BKAT          0     1300    130       1452       111     3
  BKAXINC7           BKAT          0      250     25        252       100     2
  BKAXCUS0           BKAT          1      125     13        144       115     3
```

Figure 125. Indexes Exceeding Allocated Primary Quantity Panel (ADB2312X)

The fields on this panel are:

S Input field where you enter "S" to select an index.

INDEX NAME
Name of the index.

INDEX OWNER
Authorization ID of the owner of the index.

PART
Partition number (zero for nonpatitioned indexes).

PRIM QTY (4K PGS)
Primary space allocation in 4K blocks of storage.

SEC Q (4K)
Secondary space allocation in 4K blocks of storage.

ALLOCATED (4K PAGES)
Space allocated in 4K blocks of storage.

PCT ALLOC OF PRIM Q
Percent of the primary quantity of space that is allocated.

EXT
Estimated number of extents of the index.

Allocated and Used Space for Table Spaces Panel

This panel (Figure 126) appears when you select option 13 on the DB2 Performance Queries panel.

```
DB2 Admin -------- Allocated and Used Space for Table Spaces ROW 1 TO 8 OF 275
Command ===>                                                  Scroll ===> PAGE

This panel shows the allocated and used space for the table spaces in the
databases you have selected. If the allocated space is much less than the used
space, consider reducing the size of the table spaces.

Note: If the primary or secondary quantity of 4K pages is less than the track
capacity for 4K blocks, then the number of extents shown is too high.

Valid line commands are:
 S - Select
                          Prim Qty   Sec  Allocated  Used Space Pct Used
S DB Name  TS Name   Part (in 4K)    Qty  (4K Pages) (4K pages) of Alloc   Ext
  *        *         *    *        *      *          *          *        *
- -------- --------- ---- -------- ------ ---------- ---------- -------- -----
  EANDUSR  EANSU04      0     1500    150       1560         24        1     2
  EANDUSR  EANSU05      0     1500    150       1560        446       28     2
  EANDUSR  EANSU06      0     1500    150       1560         24        1     2
  EANDUSR  EANSU07      0     1500    150       1560        336       21     2
  EANDUSR  EANSU08      0     1500    150       1560         24        1     2
  EANDUSR  EANSU09      0     1500    150       1560         24        1     2
```

Figure 126. Allocated and Used Space for Table Spaces Panel (ADB2313)

The fields on this panel are:

S Input field where you enter "S" to select an item.

DB NAME
Name of the database.

TS NAME
Name of the table space.

PART
Partition number (zero if not partitioned).

PRIM QTY (IN 4K)
Primary space allocation in 4K blocks of storage.

SEC QTY (4K PAGES)
Secondary space allocation in 4K blocks of storage.

ALLOCATED (4K PAGES)
Space allocated in 4K blocks of storage.

USED SPACE (4K PAGES)
Space used in 4K blocks of storage.

PCT USED OF ALLOC
Percent of the allocated space that is used.

EXT
Estimated number of extents of the table space.

Chapter 10. SQL ID Panels

This panel (Figure 127) appears when you select option 4 on the Administration Menu panel.

Use this panel to change your current SQL ID. You can either enter a new SQL ID or select one from the list of secondary SQL IDs that is displayed. Note that you can only change the current SQL ID to one that isn't in the list of secondary SQL IDs if you have the SYSADM privilege.

DB2 uses the current SQL ID for the CREATE, GRANT, and REVOKE SQL statements. In all other cases, DB2 uses the composite privileges, that is, the combined privileges of your current, primary, and secondary SQL IDs.

The list of secondary SQL IDs is created by simulating or invoking the authorization exit in your system. The SET CURRENT SQLID='sqlidname' command is issued to change the current SQL ID.

```
DB2 Admin ---------------- DB2 Change Current SQL ID --  ROW 115 TO 131 OF 131
Command ===>                                                Scroll ===> PAGE

Enter:                                                     Current:
 New DB2 SQL ID ===>                                       DB2 SQL ID: ISTJE

Or select one from the following list of secondary SQL IDs:

  Secondary
S SQL ID
  *
- --------
  RAVUTS
  RAVVB0
  RAVW
  RGEP
  RGET
  RGEULA
  RGEULR
  RGEUPA
  RGEUPR
  RGEUPS
```

Figure 127. Change Current SQL ID Panel (ADB24)

Chapter 11. DB2 Admin Parameters Panels

This chapter describes the DB2 Admin Parameters panels. Using these panels, you can:

- Change the way your panels look
- Change the DB2 Admin default parameters

Change DB2 Admin Parameters Panel

This panel (Figure 128) appears when you select option P on the Administration Menu panel.

Use this panel to select the DB2 Admin parameters you want to change.

```
DB2 Admin --------------- DB2 Change DB2 Admin Parameters --------------- 00:04
Option ===>

   0 - Change ISPF parameters                          DB2 System: DB2W
   1 - Change colors and highlight                     DB2 SQL ID: ISXSTL
   2 - Change DB2 Admin defaults
   P - Change/allocate print data set
```

Figure 128. Change DB2 Admin Parameters Panel (ADB2P)

Change ISPF Parameters Panel

An ISPF panel appears when you select option 0 on the Change DB2 Admin Parameters panel.

Use this panel to change ISPF parameters such as PF keys and default colors.

Change Colors and Highlight Panel

This panel (Figure 129) appears when you select option 1 on the Change DB2 Admin Parameters panel.

Use this panel to change the colors or highlighting technique on DB2 Admin panels.

Panels are split into different logical sections. You can change the color and the highlighting technique in these sections. The different sections of the panel and (in parenthesis) their default colors are described below.

If you leave an input field on the panel blank, the default value is used. Specify RESET on the command line to choose default values for all sections of the panel.

```
DB2 Admin ----------------- Change Colors and Highlight ----------------- 15:46
Command  ===>

Below enter colors and highlight for DB2 Admin panels.

The panels consist of standard sections, as indicated below.
You can select which colors and highlight these sections should have on your
panels.

Valid Colors     :  yellow red blue green white pink and turq
Valid Highlights :  blink reverse uscore or blank (default)

                   Color                   Highlight
 Headings:         YELLOW
 Text:             BLUE
 Highlighted txt:  TURQ
 Messages:         RED
 Function:         WHITE
 Input Areas:      GREEN
 Output Areas:     TURQ

Press ENTER to activate changes or PF3 to cancel changes
```

Figure 129. Change Colors and Highlight Panel (ADB2P1)

HEADING
First line of the panel (default is yellow).

TEXT
Instructions or descriptions on the panel (default is blue).

HIGHLIGHTED TEXT
Emphasized text (default is turquoise).

MESSAGES
Message area, third line on the panel when a message is returned (default is red).

FUNCTION
Command line and/or option chosen (default is white).

INPUT AREAS
Area in which you enter your input (default is green).

OUTPUT AREAS
Area in which output is returned to you (default is turquoise).

Change DB2 Admin Defaults Panel

This panel (Figure 130) appears when you select option 2 on the Change DB2 Admin Parameters panel.

Use this panel to change various parameters affecting the execution of DB2 Admin:

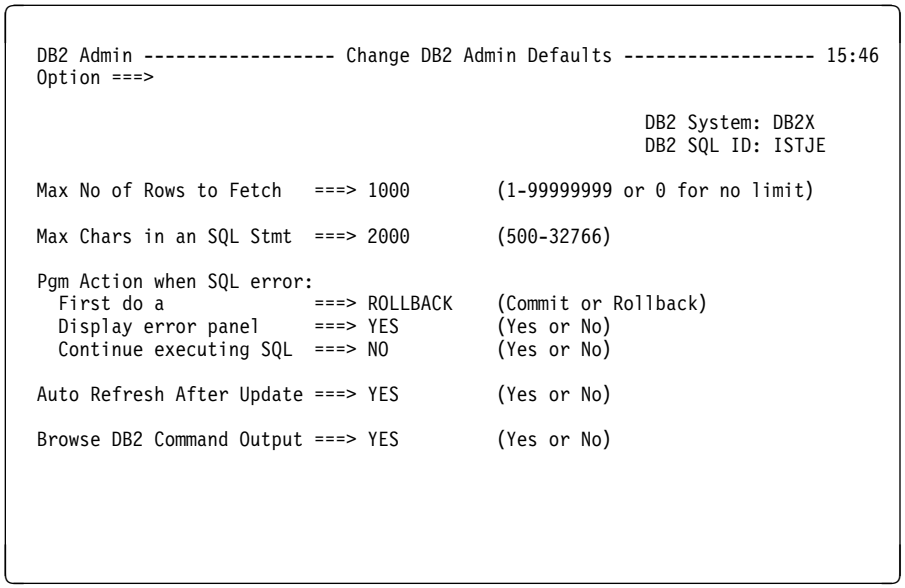


Figure 130. Change DB2 Admin Defaults Panel (ADB2P2)

MAX NO OF ROWS TO FETCH
Maximum number of rows to fetch for each SQL SELECT statement.

MAX CHARS IN AN SQL STATEMENT
The length of the buffer for SQL and ISPF statements.

PGM ACTION WHEN SQL ERROR
What DB2 Admin is to do when an SQL error occurs. The choices are:

- COMMIT or ROLLBACK the changes
- Display the SQL error panel with the SQL error message and SQLCA (YES or NO)
- Continue processing by executing the next SQL statement (YES or NO)

AUTO REFRESH AFTER UPDATE
Whether table display panels are to be refreshed after SQL updates (YES or NO). If YES, DB2 Admin refreshes the panels when they are redisplayed. For performance reasons, the refresh is limited to panels where the elapsed time to fetch the rows to be displayed is less than 10 seconds.

BROWSE DB2 COMMAND OUTPUT
Whether DB2 Admin should invoke ISPF browse (YES) or let the output default to TSO line mode (NO).

Change/Allocate Print Data Set Panel

This panel (Figure 131) appears when you select option 3 on the Change DB2 Admin Parameters panel.

Use this panel to allocate a print data set for the DB2 Admin print function.

```
DB2 Admin ------------- DB2W Change/Allocate Print Data Set ------------- 00:27
Option ===>

Enter data set name and disposition:
  Data set name ===>
  Disposition   ===>            (NEW,OLD,MOD,FREE)

For a NEW data set enter:
  Lrecl         ===> 132        (8-32760)
  Block size    ===> 6204       (0-32760)
  Format        ===>            (Fixed or Variable)
  Space units   ===>            (Tracks, Cylinders or Blocks)
  Primary space ===>            (Default 1)
  Sec. space    ===>            (Default 1)
  Unit type     ===>            (Default SYSDA)
```

Figure 131. Change/Allocate Print Data Set Panel (ADB2PP)

ENTER DATA SET NAME AND DISPOSITION

Enter the name and allocation mode of the print data set, as described below.

DATA SET NAME

The name of the data set that DB2 Admin should use for printing.

DISPOSITION

The allocation mode of the data set, which must be one of the following:

NEW

Allocate a new data set.

OLD

Use an existing data set.

MOD

Append output to an existing data set.

FREE

Deallocate print data set.

FOR A NEW DATA SET ENTER

For a new data set, the following parameters are required:

LRECL

Logical record length.

BLOCK SIZE

Block size.

FORMAT
The data set format, which can be either F (for fixed) or V (for variable) length records.

SPACE UNITS
Units in which space is to be allocated (tracks, cylinders, or blocks).

PRIMARY SPACE
Primary space allocation, specified in preceding units.

SEC. SPACE
Secondary space allocation, specified in preceding units.

UNIT TYPE
Type of UNIT for allocation.

Chapter 12. Distributed DB2 Systems Panels

This chapter describes the distributed DB2 systems panels.

This panel (Figure 132) appears when you select option DD on the Administration Menu panel. It shows the remote DB2 systems available from the DB2 system you are currently on.

Use this panel to choose the DB2 system for which you want the system catalog displayed. Line command DIS shows the active threads for the location or system you select. Press END to get back to the panel from which you came.

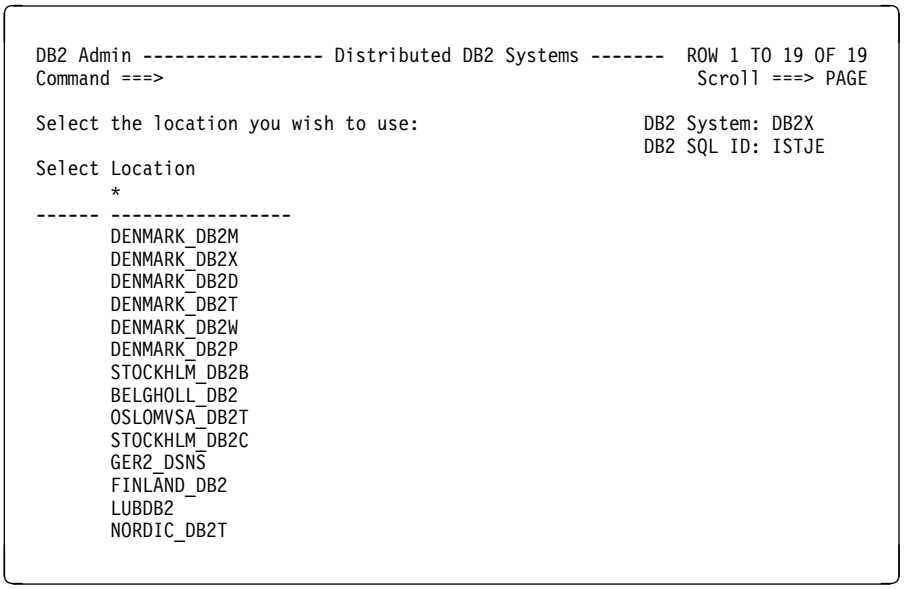


Figure 132. Distributed DB2 Systems Panel (ADB2DDF)

The fields on this panel are:

SELECT
Input field where you enter "S" to choose the system for which you want the catalog displayed.

LOCATION
Names of the remote DB2 systems available to you.

Example of Use of Distributed DB2 Systems Panel: Enter "S" in front of the DB2 location you want to access, as shown in Figure 133.

```
DB2 Admin ----------------- Distributed DB2 Systems -------  ROW 1 TO 19 OF 19
Command ===>                                                  Scroll ===> PAGE

Select the location you wish to use:                    DB2 System: DB2X
                                                        DB2 SQL ID: ISTJE
Select Location
       *
------ -----------------
       DENMARK_DB2M
       DENMARK_DB2X
       DENMARK_DB2D
S      DENMARK_DB2T
       DENMARK_DB2W
       DENMARK_DB2P
       STOCKHLM_DB2B
       BELGHOLL_DB2
       OSLOMVSA_DB2T
       STOCKHLM_DB2C
       GER2_DSNS
       FINLAND_DB2
       LUBDB2
       NORDIC_DB2T
```

Figure 133. Example of Using Distributed DB2 Systems Function (Part 1 of 2)

DB2 Admin shows you the System Catalog panel (see Figure 134 on page 187) and indicates at the top of the panel which location you are accessing.

When using the distributed DB2 systems function to access a remote DB2 system catalog, some functions in the DB2 Admin system catalog dialog are disabled. (For example, you cannot do a DB2 DISPLAY, BIND, REBIND, or FREE, nor can you generate utilities.)

```
DB2 Admin ---------------------- DB2X System Catalog ---------------------- 15:47
Option ===>


  At location: DENMARK_DB2T                              DB2 System: DB2X
   V - Volumes                                           DB2 SQL ID: ISTJE
   G - Storage groups               GA - Authorizations to storage groups
   D - Databases                    DA - Authorizations to databases
   S - Table spaces                 SA - Authorizations to tables spaces
   T - Tables, views, and aliases   TA - Authorizations to tables and views
   X - Indexes
   C - Columns                      CA - Authorizations to columns
   Y - Synonyms
   P - Plans                        PA - Authorizations to plans
   K - Packages                     KA - Authorizations to packages
   L - Collections                  LA - Authorizations to collections
   M - DBRMs                        RA - Authorizations to resources
  DS - Data base structures         ZA - Authorizations to system privileges
   H - Schemas                      HA - Authorizations to schemas
   E - User defined data types      EA - Authorizations to data types
   F - Functions                    FA - Authorizations to functions
   O - Stored procedures            OA - Authorizations to stored procedures
   J - Triggers
Enter standard selection criteria (an SQL LIKE operator will be used):
Name       ===>                    Grantor ===>
Owner      ===>                    Grantee ===>
In DB/col  ===>
And/or other selection criteria (option xC shows you columns for option x)
Column   ===>                   Oper ===>       Value ===>
```

Figure 134. Example of Using Distributed DB2 Systems Function (Part 2 of 2)

Chapter 13. Explain Panels

This chapter describes the Explain panels, which support the SQL EXPLAIN statement and provide related functions. The EXPLAIN statement gathers information about the access path DB2 chose to process a query.

Explain Panel

This panel (Figure 135) appears when you select option E on the Administration Menu panel.

Use this panel to do the following:

- Enter an SQL statement and see the resulting rows in a plan table (PLAN_TABLE).
- List rows from a plan table and see how DB2 will execute SQL statements in application plans, or packages that were bound with EXPLAIN(YES).
- Upgrade a plan table to the current version of DB2.
- Create a plan table. A plan table is needed before you can execute EXPLAIN statements.
- Create an index on the plan table. An index is recommended if optimizer hints are being used.
- Create a statement, so EXPLAIN can store the estimated cost for a statement.
- Create a function table, so EXPLAIN can store information on how DB2 resolved a function reference.

```
DB2 Admin --------------------------- Explain --------------------------- 00:50
Option ===>

                                                        DB2 System: DB2X
   E - Explain an SQL statement                         DB2 SQL ID: ISXSTL
   L - List PLAN_TABLE
         PLAN_TABLE owner    ===>                   (default is ISXSTL)
         Plan name           ===>                   (optional)
         DBRM/package name   ===>                   (optional)
         Collection ID       ===>                   (optional)
   U - Upgrade the PLAN_TABLE to current DB2 version
   C - Create a PLAN_TABLE for explain
  CX - Create an index on PLAN_TABLE for the optimizer
  CS - Create a DSN_STATEMNT_TABLE
  CF - Create a DSN_FUNCTION_TABLE
```

Figure 135. Explain Panel (ADB2E)

Explain an SQL Statement Panel

This panel (Figure 136) appears when you select option E on the Explain panel.

Use this panel to enter an SQL statement, get it explained by DB2, and see the resulting rows from the explain in a plan table.

Enter a query number and an SQL statement. If you leave the query number blank, DB2 Admin generates a query number for you in the form YYMMDDSSS, where SSS is a sequence number.

Press ENTER to have DB2 execute the EXPLAIN statement. The resulting row in the plan table is shown on the next panel. Use line command I to see the EXPLAIN results.

You can use the EDIT primary command to edit your SQL statement. Once you are in ISPF edit, use the ISPF edit copy commands to copy SQL statements to or from other data sets.

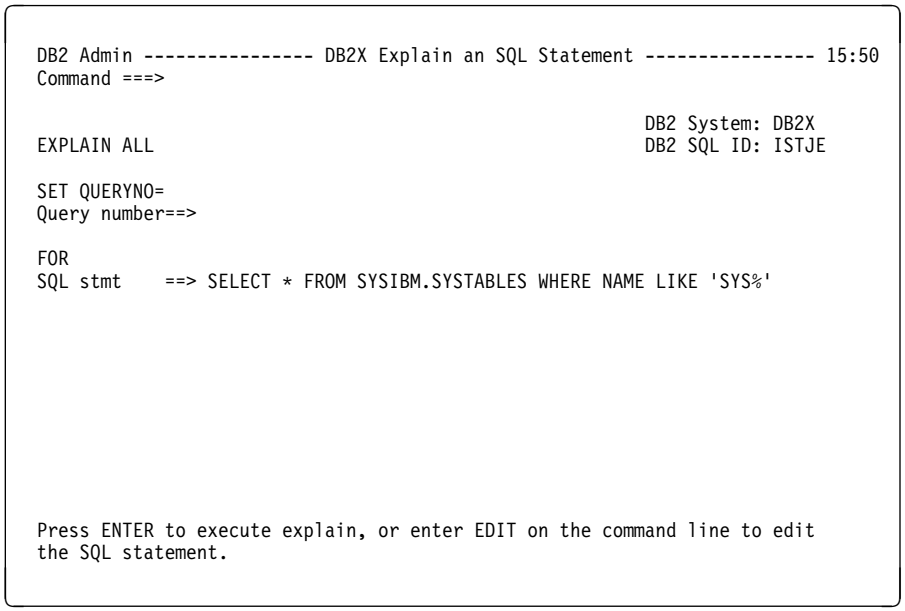


Figure 136. Explain an SQL Statement Panel (ADB2EE)

List Plan Table Panel

This panel (Figure 137) appears when you select option L on the Explain panel.

This panel shows you all rows from the plan table. The rows can be qualified by plan name, DBRM/package name, and collection ID.

Use this panel to see how DB2 will execute SQL statements from previously-executed EXPLAIN statements and from DB2 BIND commands specifying EXPLAIN(YES).

Note that the format of this panel changes dynamically. There are 3 formats:

1. Plan mode, which shows Applname (PLAN) and Progname (DBRM)
2. Packages mode, which shows Collection (COLLID) and Progname (PACKG)
3. Hint mode, which shows Hint ID and Hint Used

Use the following primary commands to switch the format:

- PLAN (switches to plan mode)
- COL (switches to packages mode)
- HINT (switches to hint mode)

```
DB2 Admin ----------- Rows from ISTJE.PLAN_TABLE ------------  ROW 1 TO 1 OF 1
Command ===>                                                  Scroll ===> PAGE

Valid line commands are:
 I - Interpretation  T - Table  X - Index  P - Plan  M - DBRM  K - Package
 DP - Delete rows for plan  DK - Delete for package  DQ - Delete for query no
 SR - Stmt table rows  FR - Function table rows  IH - Insert optimizer hint

         Query Q  Applname Progname Pl M Ac M  I T  Table
S       Number Bl (PLAN)   (DBRM)   No T Ty Co O No Owner    Table Name
   *           *  *        *        *  *  *  *  *  *  *        *
-- ----------- -- -------- -------- -- - -- -- - -- -------- ------------------
     950518002 1           ADBMAIN  1  0 I  0  N 1  SYSIBM   SYSTABLES
****************************** END OF DB2 DATA *******************************
```

Figure 137. List Plan Table Panel (ADB2EL)

You can issue two unique primary commands from this panel: COL and PLAN. They are used to toggle between displays of plan information and collection information.

The fields on this panel are:

S Input field where you enter one of the line commands listed on the panel.

QUERY NUMBER
A number that identifies the SQL statement.

Q BL
Query block number. Indicates the position of the query in the statement being explained.

APPLNAME (PLAN)
Name of the application plan for the row. Or blank for a dynamic EXPLAIN statement.

PROGNAME (DBRM)
DBRM or package name.

PL NO
Plan number. Indicates the order in which the EXPLAIN statement will be executed.

MT
Method. Indicates the join method to be used.

ACTY
Access type. Indicates the method by which the table will be accessed. This field contains one of the following:

I	Index
I1	One-fetch index scan
N	Index scan when the matching predicate contains the IN keyword
R	Table space scan
M	Multiple index scan
MX	Index scan
MI	Intersection of multiple indexes
MU	Union of multiple indexes
Blank	Not applicable to current row

MCO
Matching columns. Indicates the number of index keys used in an index scan.

IO Index only. Whether only the index is accessed in this step or whether data must also be accessed. This field contains one of the following:

N	No
Y	Yes

T NO
Table number. Indicates the position of the table in the statement.

TABLE OWNER
Owner of the table being accessed.

TABLE NAME
Name of the table being accessed.

Upgrade a Plan Table Function

Use this function (option U on the Explain Panel) to upgrade a plan table to the current version of DB2. DB2 Admin issues a series of ALTER TABLE PLAN_TABLE ADD statements to upgrade the plan table so it contains the maximum number of columns the current DB2 version supports.

When you choose this function, no panel is displayed. DB2 Admin responds with a message about the successful execution.

Create a Plan Table Panel

This panel (Figure 138) appears when you select option C on the Explain panel.

Use this panel to create a plan table. A plan table is needed for the DB2 explain function.

Enter the database and table space names you want to use for the plan table. Both names are optional. Then press ENTER to create the plan table.

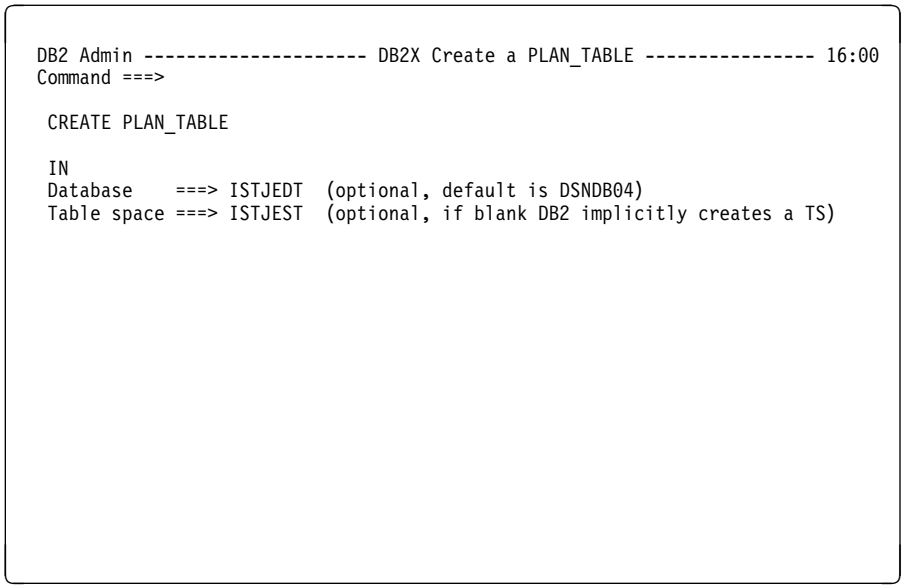


Figure 138. Create a Plan Table Panel (ADB2EC)

Create an Index on Plan Table Panel

This panel (Figure 139) appears when you select option CX on the Explain panel.

Use this panel to create an index on the plan table for the DB2 optimizer.

This option brings you to the Create Index panel (the same as option 2.4.CX), with recommended index columns filled in.

```
DB2 Admin ---------------------- DB2X Create Index ---------------------- 16:04
Command ===>

 CREATE


 UNIQUE     ===> N        (Yes, No, or UNN for UNIQUE WHERE NOT NULL)

 INDEX
 Owner      ===>          (optional, default is ISTJE)
 Name       ===> PLAN_TABLE_INDEX

 ON
 Table owner===>          (optional, default is ISTJE)
 Table name ===> PLAN_TABLE         Is this an auxiliary table ===>     (y/n)

 ( column list )
 Column list===> QUERYNO,APPLNAME,PROGNAME,VERSION,COLLID,OPTHINT


 Partitions ===>          (optional, 0 for non-partitioned INDEX)

 CLUSTER    ===>          (Yes or No, default is No)
                                                                (continued...)
```

Figure 139. Create an Index on Plan Table Panel (ADB26CX)

Create a Statement Table Panel

This panel (Figure 140) appears when you select option CS on the Explain panel.

Use this panel to create a statement table where the DB2 EXPLAIN can store the estimated cost for an SQL statement.

```
DB2 Admin ------------- DB2X Create a DSN_STATEMNT_TABLE ---------------- 16:00
Command ===>

 CREATE DSN_STATEMNT_TABLE

 IN
 Database    ===> ISTJEDT  (optional, default is DSNDB04)
 Table space ===> ISTJEST  (optional, if blank DB2 implicitly creates a TS)
```

Figure 140. Create a Statement Table Panel (ADB2EC)

Create a Function Table Panel

This panel (Figure 141) appears when you select option CF on the Explain panel.

Use this panel to create a function table where DB2 EXPLAIN can store information about how function references were resolved.

```
DB2 Admin ------------- DB2X Create a DSN_FUNCTION_TABLE ---------------- 16:00
Command ===>

 CREATE DSN_FUNCTION_TABLE

 IN
 Database    ===> ISTJEDT  (optional, default is DSNDB04)
 Table space ===> ISTJEST  (optional, if blank DB2 implicitly creates a TS)
```

Figure 141. Create a Function Table Panel (ADB2EC)

Chapter 14. System Administration Panels

This chapter describes the system administration panels.

Using these panels, you can do the functions summarized in Figure 142. Two of these functions apply only to DB2 Version 3, as shown in the figure.

System Administration Panel

This panel (Figure 142) appears when you select option Z on the Administration Menu panel.

Use this panel to choose the system administration function you want to perform.

```
DB2 Admin ----------------- DB2X System Administration ------------------ 18:32
Option ===>

                                                        DB2 System: DB2X
 DB2 activity related functions:                        DB2 SQL ID: ISXSTL
   2D - Display threads                    2U - Display/terminate utilities
   2T - Display/manage traces              2R - Display/update resource limits
   2S - Stop DB2                           2G - Display group
 Buffer pool functions:
   BD - Display buffer pools               BA - Alter buffer pools
   BH - Display buffer pool hit ratios
 DB2 log functions:
   LD - Display archive log parameters     LS - Set archive log parameters
   LA - Archive current log                LI - Display log information
   LZ - Set log checkpoint frequency
 DDF functions:
   DU - Display/update CDB
   DC - Display/cancel distributed thds    DL - Display active locations
   DT - Start DDF                          DS - Stop DDF
 Stored procedures and functions options:
   PM - Manage stored procedures           FM - Manage functions
```

Figure 142. System Administration Panel (ADB2Z)

DISPLAY THREADS
Select this option to display the current status of DB2 threads.

DISPLAY/TERMINATE UTILITIES
Select this option to display the status of utility jobs or terminate utilities.

DISPLAY/MANAGE TRACES
Select this option to display, start, or stop traces.

DISPLAY/UPDATE RESOURCE LIMITS (RLIMIT)
Select this option to display or stop the resource limit (RLIMIT) facility or to update the RLIMIT tables that are created in the system.

STOP DB2
Select this option to stop the DB2 subsystem.

DISPLAY GROUP
Select this option to display information about the data sharing group to which the DB2 subsystem belongs.

DISPLAY BUFFER POOLS
Select this option to display the current status of one or more active or inactive buffer pools.

ALTER BUFFER POOLS
Select this option to alter the attributes of active or inactive buffer pools.

DISPLAY BUFFER POOL HIT RATIOS
Select this option to display the hit ratios for the buffer pools.

DISPLAY ARCHIVE LOG PARAMETERS
Select this option to display information about the input archive log.

SET ARCHIVE LOG PARAMETERS
Select this option to set the upper limit for the number of and the deallocation time of tape units for the archive log.

ARCHIVE CURRENT LOG
Select this option to archive the current DB2 log.

DISPLAY LOG INFORMATION
Select this option to display information about the DB2 log.

SET LOG CHECKPOINT FREQUENCY
Select this option to set the DB2 system checkpoint frequency.

DISPLAY/UPDATE CDB
Select this option to display or update a table in the communications database (CDB).

DISPLAY/CANCEL DISTRIBUTED THDS
Select this option to display or cancel processing for threads that originate locally and access remote data, or originate remotely and access local data.

DISPLAY ACTIVE LOCATIONS
Select this option to display statistics about threads with a distributed relationship, or display conversation information about DB2 system threads that interact with VTAM*.

STOP DDF
Select this option to stop the distributed data facility (DDF) if it has already been started.

START DDF
Select this option to start DDF if it has not already been started.

MANAGE STORED PROCEDURES
Select this option to manage DB2 stored procedures.

MANAGE FUNCTIONS
Select this option to manage DB2 user-defined functions.

Display Threads Panel

This panel (Figure 143) appears when you select option 2D on the System Administration panel.

Use this panel to display the current status of DB2 threads.

DB2 Admin does this function by issuing the DB2 -DISPLAY THREAD command. Enter the appropriate keywords and parameters on the panel. The information DB2 Admin returns to you from the command is in ISPF browse format or in a table display panel, depending on what you specifed in "Output to." See DB2 documentation for an explanation of the -DISPLAY THREAD command and its output.

```
DB2 Admin ------------------- DB2W Display Threads ---------------------- 00:13
Command ===>

 -DISPLAY THREAD(
  Connection name    ===>                  (name or *, default is BATCH)
) TYPE(
  Thread type        ===>                  (Active, Indoubt or *)
) LOCATION(
  Locations          ===>                  (name, name* or *)
) LUWID(
  Logical UOW ID     ===>
) DETAIL
  Include details    ===>                  (Yes or No)

  Max KB DB2 output  ===> 32               (1-1000)

  Output to          ===> B                (T - table, B - browse)
```

Figure 143. Display Threads Panel (ADB2Z2D)

Display or Terminate Utilities Panel

This panel (Figure 144) appears when you select option 2U on the System Administration panel.

Use this panel to display the status of utility jobs or terminate utilities.

DB2 Admin does this function by issuing one of the following DB2 commands: -DISPLAY UTILITY or -TERMINATE UTILITY. The information DB2 Admin returns to you from the commands is in ISPF browse format. See DB2 documentation for an explanation of these commands and their output.

```
DB2 Admin ---------- DB2T Display/Terminate Utilities -------  ROW 1 TO 1 OF 1
Command ===>                                                  Scroll ===> PAGE

Valid line commands are:
 TERM - Terminate utility   DIS - Display utility

Select Userid   Utility ID         Utility   Stmt   Phase    Count     Status
       *        *                  *         *      *        *         *
------ -------- ------------------ --------- ------ -------- --------- --------
       ISTJE    ISTJE              RUNSTATS  1      RUNSTATS 0         ACTIVE
****************************** END OF DB2 DATA *******************************
```

Figure 144. Display or Terminate Utility Panel (ADB2Z2U2)

The fields on this panel are:

SELECT
Input field where you enter one of the line commands listed on the panel.

USERID
Userid of the person who is running the utility.

UTILITY ID
Utility identifier.

UTILITY
Name of the utility being run.

STMT
Number of the utility statement being processed.

PHASE
Current phase of the utility, such as RELOAD.

COUNT
Depending on the utility being run, the number of rows, pages, or page sets processed.

STATUS
Status of the utility, such as ACTIVE.

Figure 145 on page 203 shows the type of information DB2 Admin returns when you issue the DIS line command from the Utilities panel.

```
 DB2 Admin ------- DB2T Browse DB2 Command Output ---  Line 00000000 Col 001 080
 Command ===>                                                Scroll ===> PAGE

 -DIS UTIL(ISTJE)


******************************** TOP OF DATA  ********************************
DSNU105I < DSNUGDIS - USERID = ISTJE
                UTILID = ISTJE
                PROCESSING UTILITY STATEMENT 1
                UTILITY = RUNSTATS
                PHASE = RUNSTATS   COUNT = 0
                STATUS = ACTIVE
DSN9022I < DSNUGCCC '-DIS UTIL' NORMAL COMPLETION
******************************** BOTTOM OF DATA ********************************
```

Figure 145. Display Utilities Panel (ADB2DB2O)

Display or Manage Traces Panel

This panel (Figure 146) appears when you select option 2T on the System Administration panel.

Use this panel to display, start, or stop traces.

DB2 Admin does these functions by issuing one of the following DB2 commands: -DISPLAY TRACE, -START TRACE, or -STOP TRACE. The information DB2 Admin returns to you from the commands is in ISPF browse format. See DB2 documentation for an explanation of these commands and their output.

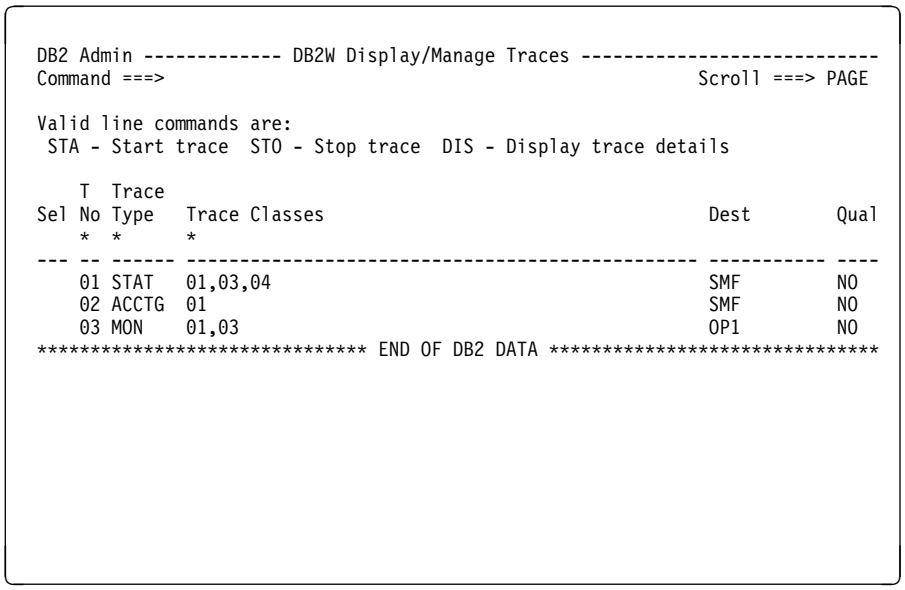


Figure 146. Display or Manage Traces Panel (ADB2Z2T2)

The fields on this panel are:

SEL
Input field where you enter one of the line commands listed on the panel.

T NO
Trace number.

TRACE TYPE
Trace type.

TRACE CLASSES
Trace classes active for this trace.

DEST
Destination for the trace.

QUAL
Whether the trace was futher qualified.

Display or Update Resource Limit (RLIMIT) Tables Panel

This panel (Figure 147) appears when you select option 2R on the System Administration panel.

Since the owner of the resource limit tables can be changed using the DB2 system parameters (DSNZPARM), you need to specify the owner you are using.

```
DB2 Admin ------ DB2X Resource Limit Table Owner ------------------------------
Command ===>

                                                          DB2 System: DB2T

Enter the owner of the resource limit tables:

  Owner ===> SYSIBM
```

Figure 147. Resource Limit Table Owner Panel (ADB2Z2R)

Enter the owner of the resource limit tables and press ENTER to display the resource limit tables owned by this owner.

The next panel (Figure 148 on page 206) appears after you enter a valid owner on the Resource Limit Table Owner panel (Figure 147)

Use this panel to select the resource limit (RLIMIT) table to display or update, or to start, stop, and display the status of RLF.

DB2 Admin does several of these functions by issuing one of the following DB2 commands: -DISPLAY RLIMIT, -STOP RLIMIT, and -START RLIMIT. The information DB2 Admin returns to you from the commands is in ISPF browse format. See DB2 documentation for an explanation of these commands and their output.

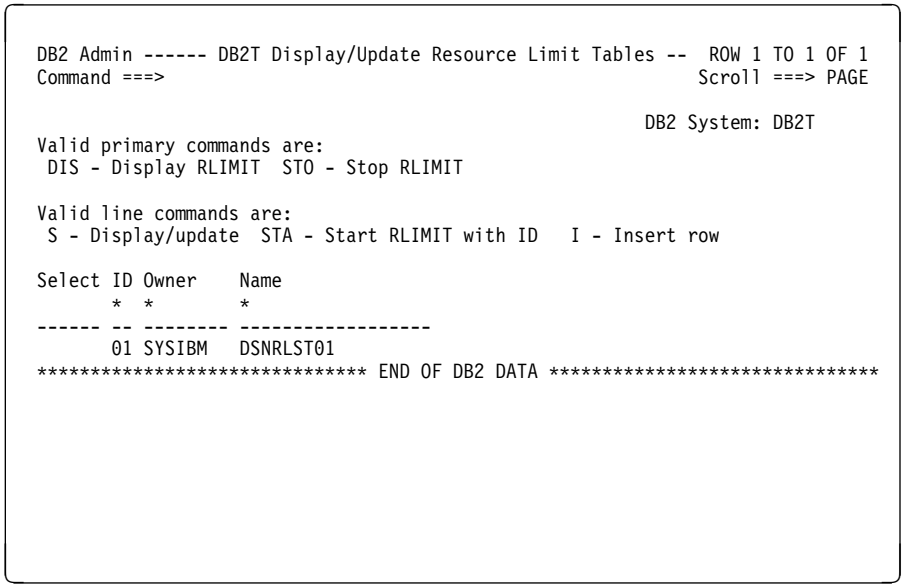


Figure 148. Display or Update Resource Limit (RLIMIT) Tables Panel (ADB2Z2RD)

This panel has two unique primary commands that you can issue:

DIS
Display the current status of the resource limit.

STO
Stop the resource limit.

The fields on this panel are:

SELECT
Input field where you enter one of the line commands listed on the panel.

ID

RLIMIT identifier.

OWNER
Authorization ID of the owner of the RLIMIT table.

NAME
Name of the RLIMIT table.

Figure 149 shows the RLIMIT status information DB2 Admin returns when you issue the DIS primary command.

```
 DB2 Admin ------- DB2W Browse DB2 Command Output ---  Line 00000000 Col 001 080
 Command ===>                                                Scroll ===> PAGE

 -DIS RLIMIT


******************************** TOP OF DATA  ********************************
DSNT700I ¢ SYSIBM.DSNRLST01 IS THE ACTIVE RESOURCE LIMIT
SPECIFICATION TABLE
DSN9022I ¢ DSNTCDIS 'DISPLAY RLIMIT' NORMAL COMPLETION
****************************** BOTTOM OF DATA ******************************
```

Figure 149. Display RLIMIT Panel (ADB2DB2O)

Figure 150 shows the information DB2 Admin returns when you issue the STO primary command to stop the resource limit facility.

```
 DB2 Admin ------- DB2W Browse DB2 Command Output ---  Line 00000000 Col 001 080
 Command ===>                                                Scroll ===> PAGE

 -STO RLIMIT


******************************** TOP OF DATA  ********************************
DSNT702I ¢ RESOURCE LIMIT FACILITY HAS BEEN STOPPED. WAS USING
SYSIBM.DSNRLST01
DSN9022I ¢ DSNTCSTP 'STOP RLIMIT' NORMAL COMPLETION
****************************** BOTTOM OF DATA ******************************
```

Figure 150. Stop RLIMIT Panel (ADB2DB2O)

Figure 151 shows the information DB2 Admin returns when you issue the STA line command to start the resource limit facility with a particular ID.

```
DB2 Admin ------- DB2W Browse DB2 Command Output ---  Line 00000000 Col 001 080
Command ===>                                                 Scroll ===> PAGE

-STA RLIMIT ID=01


******************************** TOP OF DATA  ********************************
DSNT704I ¢ SYSIBM.DSNRLST01 HAS BEEN STARTED FOR THE RESOURCE
LIMIT FACILITY
DSN9022I ¢ DSNTCSTR 'START RLIMIT' NORMAL COMPLETION
******************************** BOTTOM OF DATA ********************************
```

Figure 151. Start RLIMIT Panel (ADB2DB2O)

Figure 152 shows the panel returned when you:

- Issued the S line command to show the content of the RLIMIT table and
- Used the primary command PRE ON to show the predictive govenor columns as well

See the description of resource limits in DB2 documentation for an explanation of the fields shown on this panel.

```
DB2 Admin ---- DB2W Display/Update Resource Limits ID=01 ----  ROW 1 TO 1 OF 1
Command ===>                                                 Scroll ===> PAGE

                                                          DB2 System: DB2W
Valid line commands are:
 D - Delete  I - Insert  U - Update            F B
                                               u i
                          CPU Service          n i
Select Auth ID  Plan Name Units       LU Name  c d Collection          Package
       *        *         *           *        * * *                   *
------ -------- --------- ----------- -------- - - ------------------- --------
       TESTUSER                    ?          7   ADBL
        Predicte Govenor Limits Warn:         100 Error:       10000 Cat B:
******************************** END OF DB2 DATA ********************************
```

Figure 152. Display RLIMIT Panel (ADB2Z2RS)

Figure 153 shows the output when you enter the I line command in front of a row from the RLIMIT table in Figure 152 on page 208. On the Insert RLIMIT panel, you can enter values for a new row in the RLIMIT table.

```
DB2 Admin -------------------- DB2W Insert RLIMIT ----------------------- 16:06
Command ===>

                                                        DB2 System: DB2W
Enter/verify:                                           DB2 SQL ID: ISTJE
  Auth ID       ===> QMFUSER           (blank: all)
  Plan name     ===>                   (blank: all)
  CPU service   ===> ?                 (0-2147483647)
  LU name       ===>                   (blank: local PUBLIC: all remote)
  Function      ===> 7                 (' ' - react gov of dyn SEL,UPD,INS,DEL
                                         1  - BIND operations
                                         2  - react gov of dyn SQL by plan/pkg
                                         3  - disable query I/O parallelism
                                         4  - disable query CP parallelism
                                         5  - disables sysplex parallelism
                                         6  - predict. gov. of dyn SQL by plan
                                         7  - predict. gov. of dyn SQL by pkg)
  Bind allowed  ===>                   (for function 1 N: No)
  Collection    ===> Q                 (blank: all)
  Package       ===>                   (blank: all)
  PG warn limit ===> 200               (predic. gov. warning limit serv. units
  PG err limit  ===> 1000              (predic. gov. error limit service units
  PG cat B act  ===> W                 (Y/blank: execute N:reject W: warn)
Press ENTER to Insert RLIMIT, or press PF3 to cancel Insert.
```

Figure 153. Insert RLIMIT Panel (ADB2Z2RU)

Stop DB2 Panel

This panel (Figure 154) appears when you select option 2S on the System Administration panel.

Use this panel to stop the DB2 subsystem.

DB2 Admin does this function by issuing the DB2 -STOP DB2 command. Enter the appropriate parameter on the panel. The information DB2 Admin returns to you from the command is in ISPF browse format. See DB2 documentation for an explanation of the -STOP DB2 command and its output.

```
DB2 Admin ------------------------ DB2W Stop DB2 ------------------------ 16:07
Command ===>

 -STOP DB2

  MODE(
  Stop mode          ===>          (Quiesce or Force, default is quiesce)
)
Note: After using FORCE mode, exit from DB2 Admin without issuing any further
SQL statements.
```

Figure 154. Stop DB2 Panel (ADB2Z2S)

Display Group Panel

This panel (Figure 155) appears when you select option 2G on the System Administration panel.

Use this panel to display information about the data sharing group to which this DB2 subsystem belongs.

DB2 Admin does this function by issuing the DB2 -DISPLAY GROUP command. See DB2 documentation for an explanation of this command and its output.

```
 DB2 Admin ------- DB2X Browse DB2 Command Output ---  Line 00000000 Col 001 080
 Command ===>                                                Scroll ===> PAGE

 -DIS GROUP


******************************** Top of Data ********************************
DSN7100I -DB61 DSN7GCMD
*** BEGIN DISPLAY OF GROUP(DSNDB26 ) GROUP LEVEL(610)
                                     GROUP ATTACH NAME(DB26)
------------------------------------------------------------------------
DB2                                    DB2 SYSTEM    IRLM
MEMBER   ID  SUBSYS CMDPREF   STATUS   LVL NAME      SUBSYS IRLMPROC
-------- --- ----   --------  -------- --- --------  ----   --------
DB61       1 DB61   -DB61     ACTIVE   610 MVSG      IR61   DB61IRLM
DB62       2 DB62   -DB62     FAILED   610 MVSL      IR62   DB62IRLM
------------------------------------------------------------------------
SCA   STRUCTURE SIZE:     4096 KB, STATUS= AC,   SCA IN USE:     2 %
LOCK1 STRUCTURE SIZE:     4096 KB,             LOCK1 IN USE: <   1 %
NUMBER  LOCK ENTRIES:     1048576
NUMBER  LIST ENTRIES:       13878, LIST ENTRIES  IN USE:          22
*** END DISPLAY OF GROUP(DSNDB26 )
DSN9022I -DB61 DSN7GCMD 'DISPLAY GROUP ' NORMAL COMPLETION
****************************** Bottom of Data ******************************
```

Figure 155. Display Group Panel (ADB2DB2O)

Display Buffer Pools Panel

This panel (Figure 156) appears when you select option BD on the System Administration panel.

Use this panel to display the current status of one or more active or inactive buffer pools.

DB2 Admin does this function by issuing the DB2 -DISPLAY BUFFERPOOL command. Enter the appropriate keywords and parameters on the panel. The information DB2 Admin returns to you from the command is in ISPF browse format. See DB2 documentation for an explanation of this command and its output.

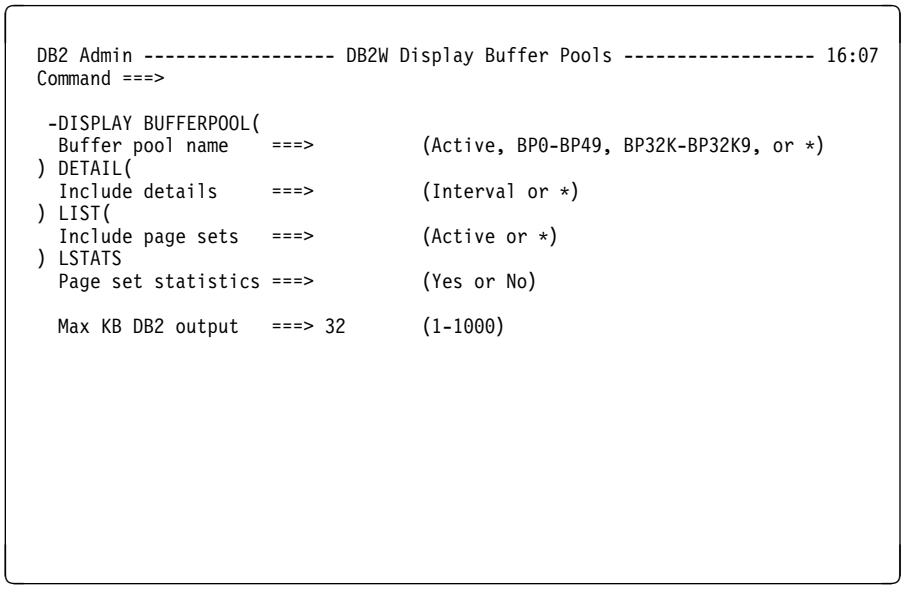


Figure 156. Display Buffer Pools Panel (ADB2ZBD)

Alter Buffer Pools Panel

This panel (Figure 157) appears when you select option BA on the System Administration panel.

Use this panel to alter the attributes of active or inactive buffer pools.

DB2 Admin does this function by issuing one of the following DB2 commands: -DISPLAY BUFFERPOOL or -ALTER BUFFERPOOL. The information DB2 Admin returns to you from the commands is in ISPF browse format. See DB2 documentation for an explanation of these commands and their output.

```
DB2 Admin --------------- DB2X Alter Buffer Pools ---------------- Row 1 of 80
Command ===>                                                  Scroll ===> PAGE

Valid line commands are:
 AL - Alter buffer pool  DIS - Display buffer pool

       BP                        Cast  VP   VP    HP              VP X
Select Name   VP Size  HP Size  Out   SEQT PSEQT SEQT DWQT VDWQT PSEQT
       *      *        *        *     *    *     *    *    *     *
------ ------ -------- -------- ----- ---- ----- ---- ---- ----- -----
       BP0        1000     2000 YES     80    50   80   50    10     0
       BP1        1000     2000 YES     80    50   80   50    10     0
       BP2        1000     2000 YES     80    50   80   50    10     0
       BP3           0        0 YES     80    50   80   50    10     0
       BP4           0        0 YES     80    50   80   50    10     0
       BP5           0        0 YES     80    50   80   50    10     0
       BP6           0        0 YES     80    50   80   50    10     0
       BP7           0        0 YES     80    50   80   50    10     0
       BP8           0        0 YES     80    50   80   50    10     0
       BP9           0        0 YES     80    50   80   50    10     0
       BP10          0        0 YES     80    50   80   50    10     0
       BP11          0        0 YES     80    50   80   50    10     0
```

Figure 157. Alter Buffer Pools Panel (ADB2ZBA2)

The fields on this panel are:

SELECT
Input field where you enter one of the line commands listed on the panel.

BP NAME
Buffer pool name.

VP SIZE
Virtual buffer pool size.

HP SIZE
Hiperpool size.

CAST OUT
Hiperspace* CASTOUT value.

VP SEQT
Virtual sequential steal threshold.

VP PSEQT
Virtual parallel sequential threshold.

HP SEQT
Hiperpool sequential steal threshold.

DWQT
Deferred write threshold.

VDWQT
Vertical deferred write threshold.

VP X PSEQT
Assisting virtual parallel sequential threshold.

Display Buffer Pool Hit Ratios Panel

This panel (Figure 158) appears when you select option BH on the System Administration panel.

Use this panel to name the buffer pools for which buffer pool hit ratios should be displayed. The hit ratio is calculated as the number of hits in the buffer pool divided by the number of GETPAGES. Specify the interval for which information should be displayed; the interval can be either since the buffer pool was created (*) or since the last display (interval).

DB2 Admin does this function by issuing a DB2 DISPLAY BUFFERPOOL command, using the parameters you enter on the panel. See DB2 documentation for an explanation of the -DISPLAY BUFFERPOOL command and its output.

DB2 Admin examines the output from the command and calculates the buffer pool hit ratios as explained in the description of panel ADBHZBH2 below.

```
DB2 Admin -------------- DB2W Display Buffer Pool Hit Ratios ------------ 23:45
Command ===>

 -DISPLAY BUFFERPOOL(
  Buffer pool name    ===>          (Active, BP0-BP49, BP32K-BP32K9, or *)
) DETAIL(
  Include details     ===>          (Interval or *)
)
```

Figure 158. Display Buffer Pool Hit Ratios Panel (ADB2ZBH)

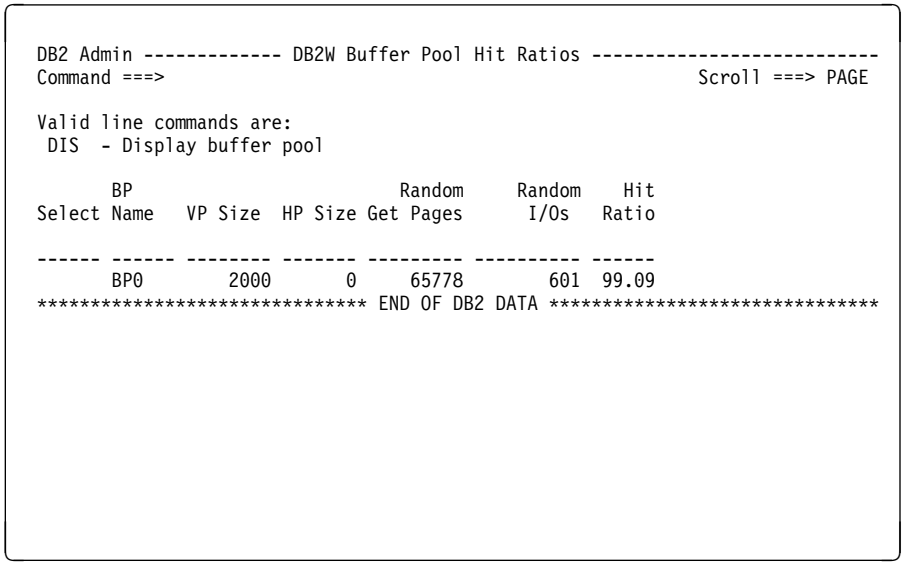


Figure 159. Buffer Pool Hit Ratios Panel (ADB2ZBH2)

SELECT
Input field where you list one of the line commands listed on the panel.

BP NAME
Name of the buffer pool.

VP SIZE
Size of the virtual buffer pool.

HP SIZE
Size of the hiperpool.

RANDOM GET PAGES
Number of random GETPAGES (RGP).

RANDOM I/Os
Number of random I/Os (RIO).

HIT RATIO
Buffer pool hit ratio, which is calculated as follows:

```
100 * (RGP - RIO) / RGP
```

Display Archive Log Parameters Panel

This panel (Figure 160) appears when you select option LD on the System Administration panel.

This panel displays information about the input archive log.

DB2 Admin does this function by issuing the -DISPLAY ARCHIVE command. See DB2 documentation for an explanation of the -DISPLAY ARCHIVE command and its output.

```
 DB2 Admin ------- DB2W Browse DB2 Command Output ---  Line 00000000 Col 001 080
 Command ===>                                                 Scroll ===> PAGE

 -DIS ARCHIVE


******************************** TOP OF DATA  ********************************
DSNJ322I ¢ DISPLAY ARCHIVE REPORT FOLLOWS-
               COUNT                   TIME
             (TAPE UNITS)            (MIN,SEC)
DSNZPARM           2                    0,00
CURRENT            2                    0,00
==============================
ADDR STATUS CORR-ID  VOLSER DATASET_NAME
NO TAPE ARCHIVE READING ACTIVITY.
END OF DISPLAY ARCHIVE REPORT.
DSN9022I ¢ DSNJC001 '-DIS ARCHIVE' NORMAL COMPLETION
******************************** BOTTOM OF DATA ******************************
```

Figure 160. Display Archive Log Parameters Panel (ADB2DB2O)

Set Archive Log Parameters Panel

This panel (Figure 161) appears when you select option LS on the System Administration panel.

Use this panel to set the upper limit for the number of and the deallocation time of tape units for the archive log.

DB2 Admin does this function by issuing the DB2 -SET ARCHIVE command. Enter the appropriate keywords and parameters on the panel. The information DB2 Admin returns to you from the command is in ISPF browse format. See DB2 documentation for an explanation of the -SET ARCHIVE command and its output.

```
DB2 Admin --------------- DB2W Set Archive Log Parameters --------------- 16:08
Command ===>

 -SET ARCHIVE

  COUNT(
  Max tape units      ===> 2        (1-99, DSNZPARM default is      2)

) TIME(
  Tape retain minutes ===> 0        (0-1440, DSNZPARM default is    0)
  Tape retain seconds ===> 00       (0-59)
)
```

Figure 161. Set Archive Log Parameters Panel (ADB2ZLSS)

Archive Current Log Panel

This panel (Figure 162) appears when you select option LA on the System Administration panel.

Use this panel to archive the current DB2 log.

DB2 Admin does this function by issuing the DB2 -ARCHIVE LOG command. Enter the appropriate keywords and parameters on the panel. The information DB2 Admin returns to you from the command is in ISPF browse format. See DB2 documentation for an explanation of the -ARCHIVE LOG command and its output.

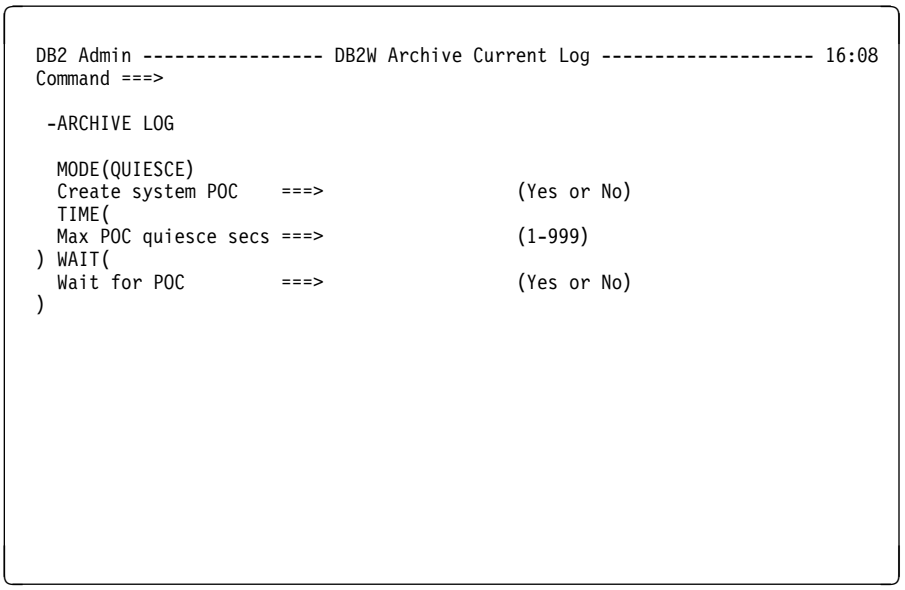


Figure 162. Archive Current Log Panel (ADB2ZLA)

Display Log Information Panel

This panel (Figure 163) appears when you select option LI on the System Administration panel.

Use this panel to display information about the DB2 log.

DB2 Admin does this function by issuing the DB2 -DISPLAY LOG command. The information DB2 Admin returns to you from the command is in ISPF browse format. See DB2 documentation for an explanation of the -DISPLAY LOG command and its output.

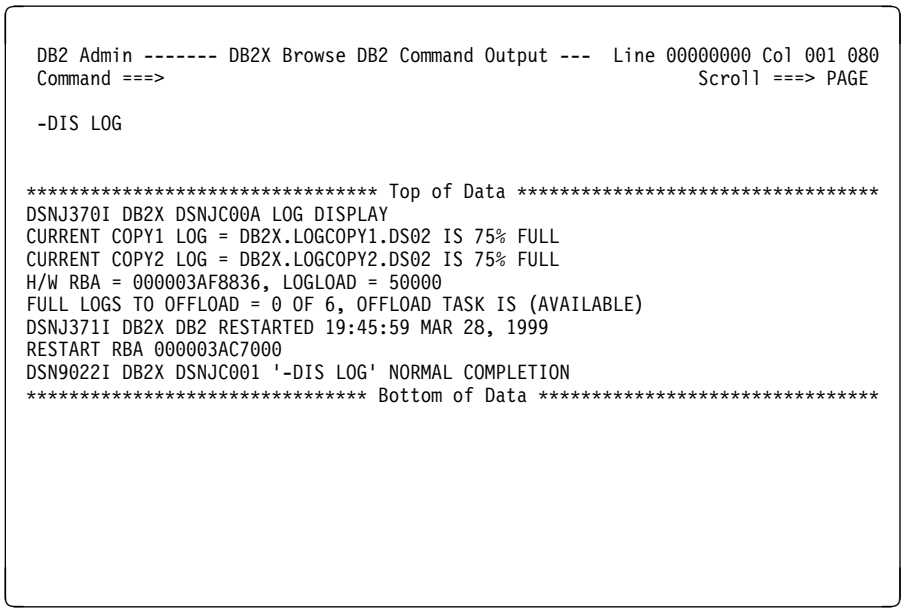


Figure 163. Display Log Information Panel (ADB2DB2O)

Change DB2 System Checkpoint Frequency Panel

This panel (Figure 164) appears when you select option LZ on the System Administration panel.

Use this panel to change how frequently DB2 should perform a system checkpoint (in terms of number of number of DB2 log records).

DB2 Admin does this function by issuing the DB2 -SET LOG command. Enter the appropriate keywords and parameters on the panel. The information DB2 Admin returns to you from the command is in ISPF browse format. See DB2 documentation for an explanation of the -SET LOG command and its output.

```
DB2 Admin -------- DB2X Change DB2 System Checkpoint Frequency ---------- 18:33
Command ===>

 -SET LOG

  LOGLOAD
  Checkpoint frequency ===>                  (200-16000000)
)
```

Figure 164. Change DB2 System Checkpoint Frequency Panel (ADB2ZLZ)

Display or Update CDB Panel

This panel (Figure 165) appears when you select option DU on the System Administration panel.

Use this panel to select the table in the communications database (CDB) you want to display or update. Figure 167 on page 224 through Figure 172 on page 229 show the CDB table panels.

If you want to insert rows into an empty table, you can do this by choosing option xI, where x represents the table (for example, 3I tells DB2 Admin to insert rows into the LUMODES table).

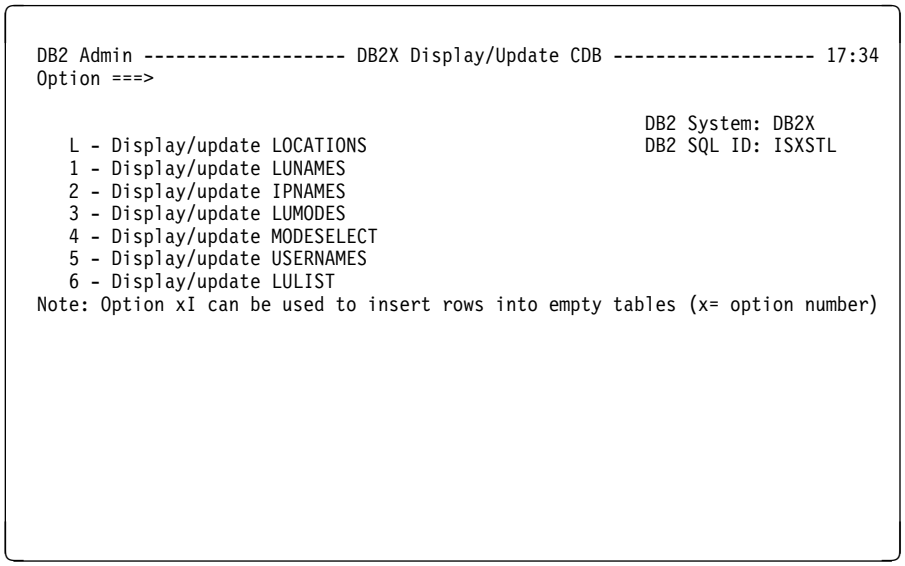


Figure 165. Display or Update CDB Panel (ADB2Z5)

Display or Update LOCATIONS Panel

This panel (Figure 166) appears when you select option L on the Display/Update Communications DB panel.

This panel displays the rows in the LOCATIONS table in the CDB. You can update the LOCATIONS table using the following line commands:

D Deletes the row
I Inserts a new row. Row values can be entered on the next panel.
U Updates the row. Row values can be changed on the next panel.

```
DB2 Admin ------------ DB2X Display/Update LOCATIONS -------------- Row 1 of 1
Command ===>                                                  Scroll ===> PAGE

                                                          DB2 System: DB2X
Valid line commands are:
 D - Delete  I - Insert  U - Update  DIS - Display location  S - Select
 ALIAS - Aliases for location  LU - LU name  IP - IP name
 ILU - Insert LU  IIP - Insert IP name

                        Link
Select Location         Name     Port                              TP Name
       *                *        *                                 *
------ ---------------- -------- --------------------------------- -------------
       DENMARK_DB2W     DKLUDB2W
****************************** END OF DB2 DATA *******************************
```

Figure 166. Display or Update LOCATIONS Panel (ADB2Z5L)

For a description of the fields on this panel, see the description of the SYSIBM.LOCATIONS table in DB2 documentation.

Display or Update LUNAMES Panel

This panel (Figure 167) appears when you select option 1 on the Display/Update Communications DB panel.

This panel displays the rows in the LUNAMES table in the CDB. You can update the LUNAMES table using the following line commands:

D Deletes the row
I Inserts a new row. Row values can be entered on the next panel.
U Updates the row. Row values can be changed on the next panel.

```
DB2 Admin ------------- DB2X Display/Update LUNAMES --------------- Row 1 of 2
Command ===>                                                  Scroll ===> PAGE

                                                          DB2 System: DB2X
Valid line commands are:
 D - Delete  I - Insert  U - Update  LOC - Locations  LUM - Lu modes
 USER - User names  MODE - Mode select  ILOC - Insert location
 ILUM - Insert LU modes  IMODE - Insert mode  IUSER - Insert user

                System    Security: Encrypt  Mode   User
Select LU Name  Mode Name In  Out   Password Select Names Generic
       *        *         *   *     *        *      *     *
------ -------- --------- --- ---   -------- ------ ----- -------
                          V   P     Y        N      O     N
       DKLUDB2W           V   A     N        N      O     N
****************************** END OF DB2 DATA ******************************
```

Figure 167. Display or Update LUNAMES Panel (ADB2Z51)

For a description of the fields on this panel, see the description of the SYSIBM.LUNAMES table in DB2 documentation.

Display or Update IPNAMES Panel

This panel (Figure 168) appears when you select option 2 on the Display/Update Communications DB panel.

```
DB2 Admin ------------- DB2W Display/Update IPNAMES --------------- Row 1 of 1
Command ===>                                                  Scroll ===> PAGE

                                                            DB2 System: DB2W
Valid line commands are:
 D - Delete  I - Insert  U - Update  LOC - Locations  USER - User names
 ILOC - Insert location   IUSER - Insert user

       Link     Security User
Select Name     Out      Names IP address
       *        *        *     *
------ -------- -------- ----- ------------------------------------------------
       DKIP91   P        0     132.131.61.91
****************************** END OF DB2 DATA *******************************
```

Figure 168. Display or Update IPNAMES Panel (ADB2Z52)

For a description of the fields on this panel, see the description of the SYSIBM.IPNAMES table in DB2 documentation.

Display or Update LUMODES Panel

This panel (Figure 169) appears when you select option 3 on the Display/Update Communications DB panel.

This panel displays the rows in the LUMODES table in the CDB. You can update the LUMODES table using the following line commands:

D Deletes the row
I Inserts a new row. Row values can be entered on the next panel.
U Updates the row. Row values can be changed on the next panel.

```
DB2 Admin -------------- DB2W Display/Update LUMODES -------------- Row 1 of 1
Command ===>                                                  Scroll ===> PAGE

                                                          DB2 System: DB2W
Valid line commands are:
 D - Delete  I - Insert  U - Update  LU - LU name
                          Conv
Select LU Name  Mode Name Limit
       *        *         *
------ -------- --------- ------
*      DKLUDB2X IBMRDB         5
****************************** END OF DB2 DATA *******************************
```

Figure 169. Display or Update LUMODES Panel (ADB2Z53)

For a description of the fields on this panel, see the description of the SYSIBM.LUMODES table in DB2 documentation.

Display or Update MODESELECT Panel

This panel (Figure 170) appears when you select option 4 on the Display/Update Communications DB panel.

This panel displays the rows in the MODESELECT table in the CDB. You can update the MODESELECT table using the following line commands:

D Deletes the row
I Inserts a new row. Row values can be entered on the next panel.
U Updates the row. Row values can be changed on the next panel.

```
DB2 Admin ----------- DB2T Display/Update MODESELECT ------  ROW 1 TO 21 OF 22
Command ===>                                                  Scroll ===> PAGE

                                                          DB2 System: DB2T
Valid line commands are:
 D - Delete  I - Insert  U - Update  LU  - LU name  LUM - LU modes

Select Auth ID  Plan Name LU Name  Mode Name
       *        *         *        *
------ -------- --------- -------- ---------
               QMF       DKLUDB2X IBMRDRS
****************************** END OF DB2 DATA *******************************
```

Figure 170. Display or Update MODESELECT Panel (ADB2Z54)

For a description of the fields on this panel, see the description of the SYSIBM.MODESELECT table in DB2 documentation.

Display or Update USERNAMES Panel

This panel (Figure 171) appears when you select option 5 on the Display/Update Communications DB panel.

This panel displays the rows in the USERNAMES table in the CDB. You can update the USERNAMES table using the following line commands:

D Deletes the row
I Inserts a new row. Row values can be entered on the next panel.
U Updates the row. Row values can be changed on the next panel.

```
DB2 Admin ----------- DB2X Display/Update USERNAMES --------------- Row 1 of 2
Command ===>                                                  Scroll ===> PAGE

                                                          DB2 System: DB2X
Valid line commands are:
 D - Delete  I - Insert  U - Update  LU  - LU name  IP  - IP name

Select T Auth ID  Link     New ID   Password
       * *        *        *        *
------ - -------- -------- -------- --------
       O
       O SYSADM   DKLUDB2W NORMUSR
****************************** END OF DB2 DATA ******************************
```

Figure 171. Display or Update USERNAMES Panel (ADB2Z55)

For a description of the fields on this panel, see the description of the SYSIBM.USERNAMES table in DB2 documentation.

Display or Update LULIST Panel

This panel (Figure 172) appears when you select option 6 on the Display/Update Communications DB panel.

This panel displays the rows in the LULIST table in the CDB. You can update the LULIST table using the following line commands:

D Deletes the row
I Inserts a new row. Row values can be entered on the next panel.
U Updates the row. Row values can be changed on the next panel.

```
DB2 Admin ------------ DB2W Display/Update LULIST -----------------------------
Command ===>                                                  Scroll ===> PAGE

                                                           DB2 System: DB2W
Valid line commands are:
 D - Delete  I - Insert  U - Update  LU - LU name

       Link     Generic
Select Name     LU Name
       *         *
------ -------- ---------
       DKLUDB21 DKLUDB2
       DKLUDB22 DKLUDB2
****************************** END OF DB2 DATA ******************************
```

Figure 172. Display or Update LULIST Panel (ADB2Z56)

For a description of the fields on this panel, see the description of the SYSIBM.LULIST table in DB2 documentation.

Display or Cancel Distributed Threads Panel

This panel (Figure 173) appears when you select option DC on the System Administration panel.

Use this panel to cancel processing for distributed data facility (DDF) threads that originate locally and access remote data, or originate remotely and access local data.

DB2 Admin does this function by issuing one of the following DB2 commands: -DISPLAY THREAD or -CANCEL DDF THREAD. The information DB2 Admin returns to you from the commands is in ISPF browse format. See DB2 documentation for an explanation of these commands and their output.

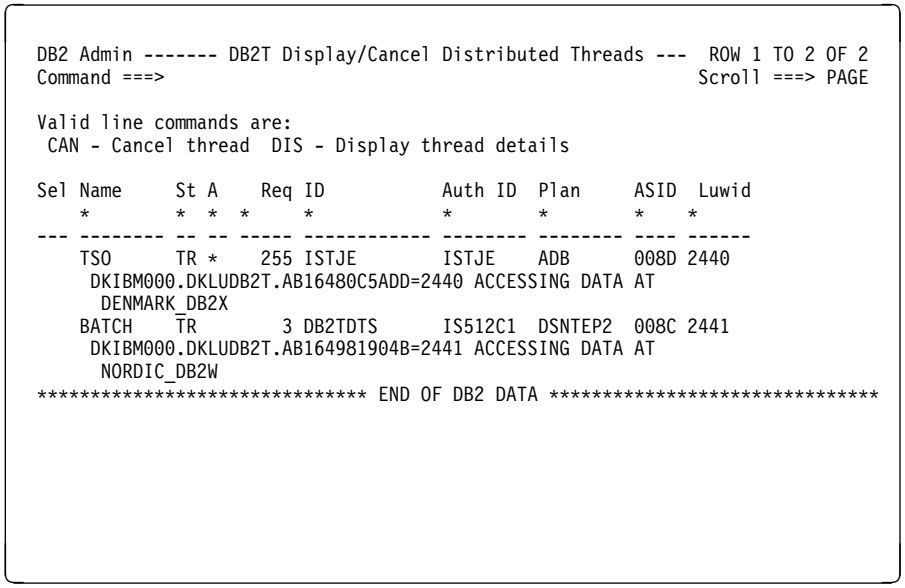


Figure 173. Display or Cancel Distributed Threads Panel (ADB2ZDC2)

The fields on this panel are:

SEL
Input field where you enter one of the line commands listed on the panel.

NAME
Connection name.

ST
Connection status.

A
Active indicator.

REQ
Number of DB2 requests.

ID
Correlation ID.

AUTH ID
Authorization ID.

PLAN
Plan name.

ASID
Address space ID.

LUWID
Logical unit-of-work ID.

Figure 174 shows the type of information DB2 Admin returns when you issue the DIS line command to display information about a thread.

```
 DB2 Admin ------- DB2T Browse DB2 Command Output ---  Line 00000000 Col 001 080
 Command ===>                                                 Scroll ===> PAGE

 -DIS THD(*) LUWID(2440) DETAIL


******************************** TOP OF DATA  ********************************
DSNV401I < DISPLAY THREAD REPORT FOLLOWS -
DSNV402I < ACTIVE THREADS -
NAME     ST A   REQ ID           AUTHID   PLAN     ASID
TSO      TR *   256 ISTJE        ISTJE    ADB      008D
 -DKIBM000.DKLUDB2T.AB16480C5ADD=2440 ACCESSING DATA AT
 -DENMARK_DB2X
 --LOCATION         SESSID           A ST TIME
 --DENMARK_DB2X     F0839112CD27CFBC   S1 9513816160825
DISPLAY ACTIVE REPORT COMPLETE
DSN9022I < DSNVDT '-DIS THD' NORMAL COMPLETION
******************************** BOTTOM OF DATA ********************************
```

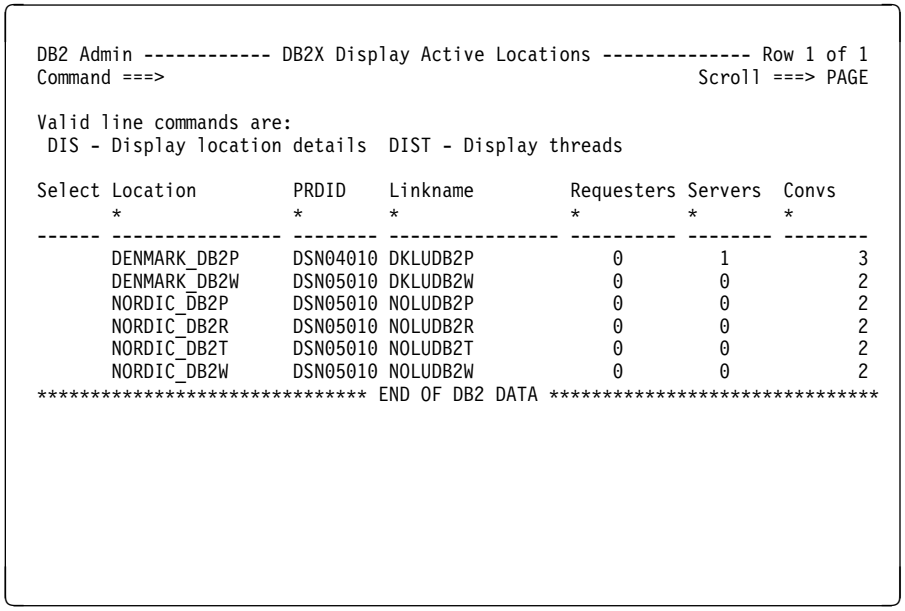
Figure 174. Display Distributed Threads Panel (ADB2DB2O)

Display Active Locations Panel

This panel (Figure 175) appears when you select option DL on the System Administration panel.

Use this panel to display statistics about threads with a distributed relationship, or display conversation information about DB2 system threads that interact with VTAM.

DB2 Admin does this function by issuing one of the following DB2 commands: -DISPLAY LOCATION or DISPLAY THREAD. The information DB2 Admin returns to you from the commands is in ISPF browse format. See DB2 documentation for an explanation of these commands and their output.



```
DB2 Admin ------------ DB2X Display Active Locations -------------- Row 1 of 1
Command ===>                                                      Scroll ===> PAGE

Valid line commands are:
 DIS - Display location details  DIST - Display threads

Select Location         PRDID    Linkname         Requesters Servers  Convs
       *                *        *                *          *        *
------ ---------------- -------- ---------------- ---------- -------- --------
       DENMARK_DB2P     DSN04010 DKLUDB2P             0         1            3
       DENMARK_DB2W     DSN05010 DKLUDB2W             0         0            2
       NORDIC_DB2P      DSN05010 NOLUDB2P             0         0            2
       NORDIC_DB2R      DSN05010 NOLUDB2R             0         0            2
       NORDIC_DB2T      DSN05010 NOLUDB2T             0         0            2
       NORDIC_DB2W      DSN05010 NOLUDB2W             0         0            2
****************************** END OF DB2 DATA *******************************
```

Figure 175. Display Active Locations Panel (ADB2ZDL2)

The fields on this panel are:

SELECT
Input field where you enter one of the line commands listed on the panel.

LOCATION
Location name.

PRDID
Database product.

LINKNAME
LU name

REQUESTERS
Number of requestors.

SERVERS
Number of servers.

CONVS
Number of conversations.

Stop DDF Panel

This panel (Figure 176) appears when you select option DS on the System Administration panel.

Use this panel to stop the distributed data facility (DDF) if it has already been started.

DB2 Admin does this function by issuing the DB2 -STOP DDF command. Enter the appropriate parameter on the panel. The information DB2 Admin returns to you from the command is in ISPF browse format. See DB2 documentation for an explanation of the -STOP DDF command and its output.

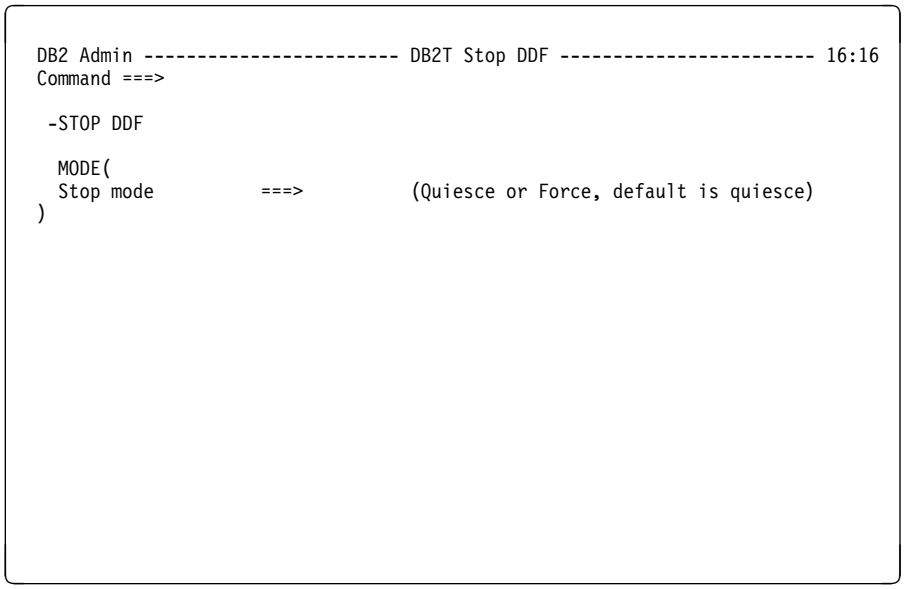


Figure 176. Stop DDF Panel (ADB2ZDS)

Start DDF Panel

This panel (Figure 177) appears when you select option DT on the System Administration panel.

This panel indicates that the distributed data facility (DDF) has been started.

DB2 Admin does this function by issuing the DB2 -STA DDF command. See DB2 documentation for an explanation of the -STA DDF command and its output.

```
 DB2 Admin ------- DB2W Browse DB2 Command Output ---  Line 00000000 Col 001 080
 Command ===>                                                Scroll ===> PAGE

 -STA DDF


******************************** TOP OF DATA  ********************************
DSNL021I ¢ START DDF COMMAND ACCEPTED
******************************* BOTTOM OF DATA ********************************
```

Figure 177. Start DDF Panel (ADB2DB2O)

Manage Stored Procedures Panel

This panel (Figure 178) appears when you select option PM on the System Administration panel. The layout of this panel depends on the DB2 version you are using. The panel shown here is the one you get if you are using DB2 V6.

Use this panel to choose the operation you want to perform.

```
DB2 Admin ---------------- DB2X Manage Stored Procedures ---------------- 17:38
Option ===>

                                                        DB2 System: DB2X
   1 - Display/alter stored procedures                  DB2 SQL ID: ISXSTL
   2 - Create stored procedure
   3 - Display stored procedure statistics
   4 - Start all stored procedures
   5 - Stop all stored procedures
   6 - Create view on SYSIBM.SYSROUTINES
   7 - Display views on SYSIBM.SYSROUTINES

   Stored procedure catalog table/view for options 1-2:
     Owner ===>                 (default is SYSIBM)
     Name  ===>                 (default is SYSROUTINES)

 Stored procedures are also available from option 1.J
```

Figure 178. Manage Stored Procedures Panel (ADB2ZP)

Display/Alter Stored Procedures Panel

This panel (Figure 179) appears when you select option 1 on the Manage Stored Procedures panel.

This panel shows the stored procedures you have defined in your system.

```
DB2 Admin ---------------- DB2X Stored Procedures ----------------- Row 1 of 6
Command ===>                                                  Scroll ===> PAGE

Valid line commands are:
 AH - Schema Auth  A - Auth  DROP - Drop  AL - Alter   K - Package
 PA - Parms  RT - Return type  DIS - Display  STO - Stop  STA - Start
 GR - Grant  COM - Comment  I - Interpretation
                                                 S
                                              P  Q S P E C Result External
S    Schema   Name               Parms  Language S F L R T S R Sets   Name
     *        *                  *      *        * * * * * * * *      *
---- -------- ------------------ ------ -------- - - - - - - - ------ ---------
     ADB      ADB2RE                  6 PLI      D Y M N M D N      2 ADB2RE
     DSN8     DSN8EP2                 5 PLI      N Y N N M D N      0 DSN8EP2
     ISTJE    DUMMY                   1          D Y N N M D N      0 DUMMY
     ISTJE    T1                      1 PLI      D Y C N M D N      0 T1
     ISTJE    T2                      2 PLI      G Y M Y M D Y      1 T3
     SYSPROC  DSNWZP                  1 ASSEMBLE G Y C N M D N      0 DSNWZP
****************************** END OF DB2 DATA *******************************
```

Figure 179. Display/Alter Stored Procedures Panel (ADB21O)

The meaning of the fields on this panel is as follows:

S
Input field where you enter one of the line commands listed on the panel.

SCHEMA
Schema of the stored procedure.

NAME
Name of the stored procedure.

PARMS
Number of parameters for the stored procedure.

LANGUAGE
Implementation language.

PS
Parameter style, which is one of the following:

- **D** DB2SQL
- **G** General
- **N** General with nulls

F
Fenced (applies if it is run separately from DB2).

SQL
Whether SQL statements are allowed, which is one of the following:

N Contains no SQL statements
C Contains SQL statements
R Reads SQL data
M Modifies SQL data

SR
Whether the program should remain resident when it ends.

PT
Program type, which is one of the following:

M Main
S Subroutine

ES
External security, which is one of the following:

D DB2 address space user
U User
C Definer

CR
Commit on return.

RESULT SETS
Maximum number of result sets that can be returned.

EXTERNAL NAME
Load module name for the stored procedure.

Create Stored Procedure Panel

This panel (Figure 180) appears when you select option 2 on the Manage Stored Procedures panel.

Enter the required parameters and press ENTER to continue with the create operation, or press END to avoid creating a procedure.

DB2 Admin does this function by issuing an SQL CREATE PROCEDURE statement with the parameters you specify. See DB2 documentation for an explanation of the CREATE PROCEDURE statement and its parameters.

```
DB2 Admin -------------------- DB2X Create Procedure -------------------- 11:00
Command ===>

 CREATE PROCEDURE

 Schema      ===>                    (optional, default is ISTJE)
 Name        ===>

 (
 Number of parameters ===>
 )
                                                                (continued...)
```

Figure 180. Create Stored Procedure Panel (ADB26CO)

Display Stored Procedure Statistics Panel

This panel (Figure 181) appears when you select option 3 on the Manage Stored Procedures panel.

This panel shows statistics for stored procedures accessed by DB2 applications.

```
 DB2 Admin ------- DB2W Browse DB2 Command Output ---  Line 00000000 Col 001 080
 Command ===>                                                          > PAGE

 -DIS PROC(*.*)


******************************** TOP OF DATA  ********************************
DSNX940I ¢ DSNX9DIS DISPLAY PROCEDURE REPORT FOLLOWS -
PROCEDURE          MODULE   STATUS ACTIVE MAXACT QUEUED MAXQUE TIMEOUT
TESTPROC           TESTPROC STARTED     0      1      0      0       0
DSNX9DIS DISPLAY PROCEDURE REPORT COMPLETE
******************************** BOTTOM OF DATA ********************************
```

Figure 181. Display Stored Procedure Statistics Panel (ADB2DB2O)

Start All Stored Procedures Panel

This panel (Figure 182) appears when you select option 4 on the Manage Stored Procedures panel.

This panel shows the output from a DB2 START PROCEDURE(*.*) command.

```
 DB2 Admin ------- DB2W Browse DB2 Command Output ---  Line 00000000 Col 001 080
 Command ===>                                                 Scroll ===> PAGE

 -STA PROC(*.*)


******************************** TOP OF DATA  ********************************
DSNX946I ¢ DSNX9ST2 START PROCEDURE SUCCESSFUL FOR *.*
******************************** BOTTOM OF DATA ******************************
```

Figure 182. Start All Stored Procedures Panel (ADB2DB2O)

Stop All Stored Procedures Panel

This panel (Figure 183) appears when you select option 5 on the Manage Stored Procedures panel.

This panel shows the output from a DB2 STOP PROCEDURE(*.*) command.

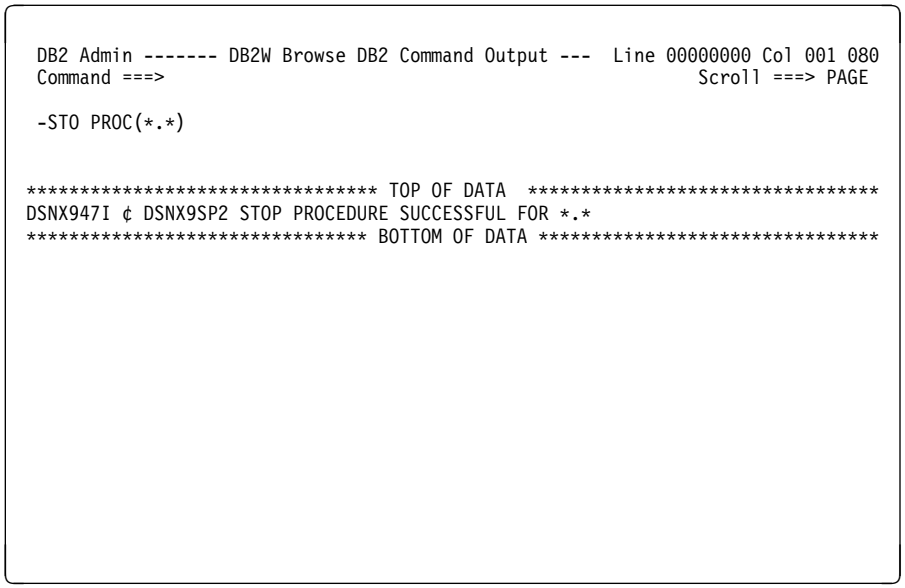


Figure 183. Stop All Stored Procedures Panel (ADB2DB2O)

Create View on SYSIBM.SYSROUTINES Panel

This panel (Figure 184) appears when you select option 6 on the Manage Stored Procedures panel.

Use this panel to create a view of stored procedures on SYSIBM.SYSROUTINES. This is useful if you want to let people administer their own stored procedures. This panel lets you define a view for all procedures with the (LIKE) pattern you define.

For example, you can define view ABC.PROCEDURES as a view on SYSIBM.SYSROUTINES WHERE SCHEMA LIKE 'ABC%'. View ABC.PROCEDURES will contain all stored procedures with the schema starting with ABC.

At the same time as you create the view, you can GRANT SELECT, INSERT, UPDATE, and DELETE on the view to a list of authorization ids (grantees).

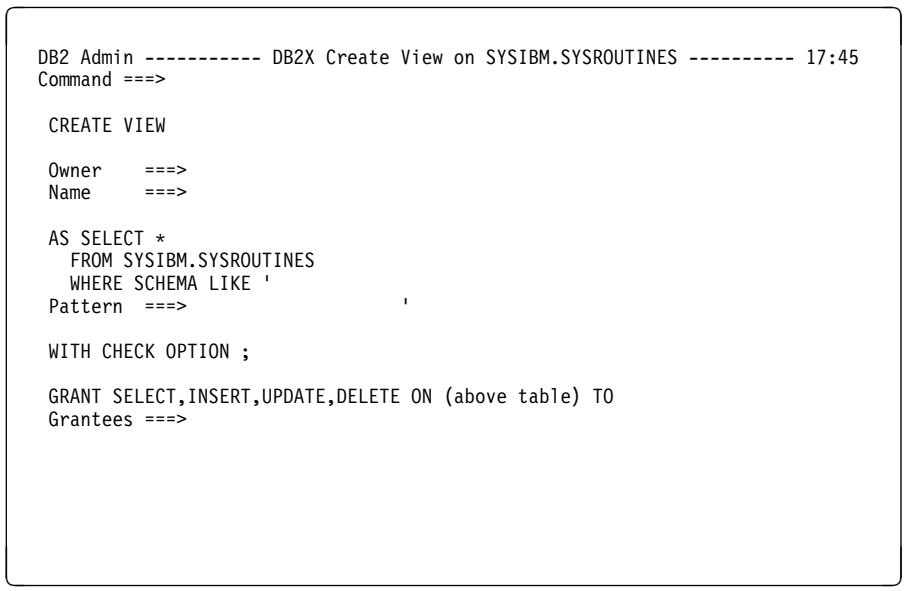


Figure 184. Create View on SYSIBM.SYSROUTINES Panel (ADB2ZP6)

Display Views on SYSIBM.SYSROUTINES Panel

This panel (Figure 185) appears when you select option 7 on the Manage Stored Procedures panel.

This panel shows the views that exist on SYSIBM.SYSROUTINES; for example, it would show the views created using option 6 on the Manage Stored Procedures panel.

For an explanation of the fields on this panel, see page 72.

```
DB2 Admin ----------- DB2W Tables, Views, and Aliases -------  ROW 1 TO 3 OF 3
Command ===>                                                  Scroll ===> PAGE

Valid line commands are:
 C - Columns  A - Auth  L - List  X - Indexes  S - Table space  D - Database
 V - Views  T - Tables  P - Plans  Y - Synonyms  SEL - Select prototyping
 ? - Show all line commands

Sel   Name               Owner    T DB Name  TS Name    Cols        Rows Checks
      *                  *        * *        *        *      *           *
----- ------------------ -------- - -------- -------- ------ ----------- ------
      PROCEDURES         ISTJE    V DSNDB06  SYSOBJ       79          -1      0
      FUNCTIONS          ISTJE    V DSNDB06  SYSOBJ       79          -1      0
****************************** END OF DB2 DATA *******************************
```

Figure 185. Display Views on SYSIBM.SYSROUTINES Panel (ADB21T)

Manage Functions Panel

This panel (Figure 186) appears when you select option FM on the System Administration panel.

Use this panel to choose the function you want to perform.

```
DB2 Admin ---------------- DB2X Manage Functions ------------------------ 18:35
Option ===>

                                                        DB2 System: DB2X
   1 - Display/alter functions                          DB2 SQL ID: ISXSTL
   2 - Create functions
   3 - Display function statistics
   4 - Start all functions
   5 - Stop all functions
   6 - Create view on SYSIBM.SYSROUTINES
   7 - Display views on SYSIBM.SYSROUTINES

   Catalog table/view for options 1-2:
     Owner ===> SYSIBM           (default is SYSIBM)
     Name  ===> SYSROUTINES      (default is SYSROUTINES)

 Stored procedures are also available from option 1.J
```

Figure 186. Manage Functions Panel (ADB2ZF)

Display or Alter Functions Panel

This panel (Figure 187) appears when you select option 1 on the Manage Functions panel.

This panel displays information about all the user-defined functions in your DB2 subsystem.

```
DB2 Admin -------------------- DB2X Functions -------------------- Row 1 of 44
Command ===>                                                  Scroll ===> PAGE

Valid line commands are:
 AH - Schema Auth  A - Auth  DROP - Drop  AL - Alter   K - Package
 PA - Parms  RT - Return type  DIS - Display  STO - Stop  STA - Start
 COM - Comment  I - Interpretation
                                                    D         S
                                          F         E E C P   Q S P E External
S    Schema   Name     Specific Name      O T Parms  T A F S F L R T S Name
     *        *        *                  * * *      * * * * * * * * * *
---- -------- -------- ------------------ - - ------ - - - - - - - - - --------
     ISTJE    +        SQL990208100338896 U S      2     N
     ISTJE    -        KR_MINUS           U S      2     N
     ISTJE    BLOB     SQL99020816075424# S S      1     Y
     ISTJE    CHAR     SQL990208160600039 S S      1     Y
     ISTJE    CLOB     SQL99020816074873# S S      1     Y
     ISTJE    D        SQL99020817171170M S S      1     Y
     ISTJE    DATE     SQL99020816083184# S S      1     Y
     ISTJE    DECIMAL  SQL990118152235418 S S      1     Y
     ISTJE    DECIMAL  SQL990218162815951 S S      1     Y
     ISTJE    DECIMAL  SQL99020817171173M S S      1     Y
```

Figure 187. Manage Functions Panel (ADB21F)

The meaning of the fields on this panel is as follows:

S
Input field where you enter one of the line commands listed on the panel.

SCHEMA
Schema of the function.

NAME
Name of the function.

SPECIFIC NAME
Specific name of the function.

O
Origin of the function, which is one of the following:

- **E** External
- **U** Sourced
- **S** System generated

FT
Function type, which is one of the following:

- **C** Column
- **S** Scaler
- **T** Table

PARMS
Number of parameters for the function.

DET
Whether the function returns the same result when called with the same parameters.

EA
External action, that is, whether the function has external impact.

CF
Cast function, which is one of the following:

Y Yes
N No

PS
Parameter style, which is one of the following:

D DB2SQL
G General
N General with nulls

F
Fenced (applies if it is run separately from DB2).

SQL
Whether SQL statements are allowed, which is one of the following:

N Contains no SQL statements
C Contains SQL statements
R Reads SQL data
M Modifies SQL data

SR
Whether the program should remain resident when it ends.

PT
Program type, which is one of the following:

M Main
S Subroutine

ES
External security, which is one of the following:

D DB2 address space user
U User
C Definer

EXTERNAL NAME
Load module name for the stored procedure.

Create Function Panel

This panel (Figure 188) appears when you select option 2 on the Manage Functions panel.

Use this panel to create a new user-defined function.

DB2 Admin does this function by issuing an SQL CREATE FUNCTION statement with the parameters you specify. See DB2 documentation for an explanation of the CREATE FUNCTION statement and its parameters.

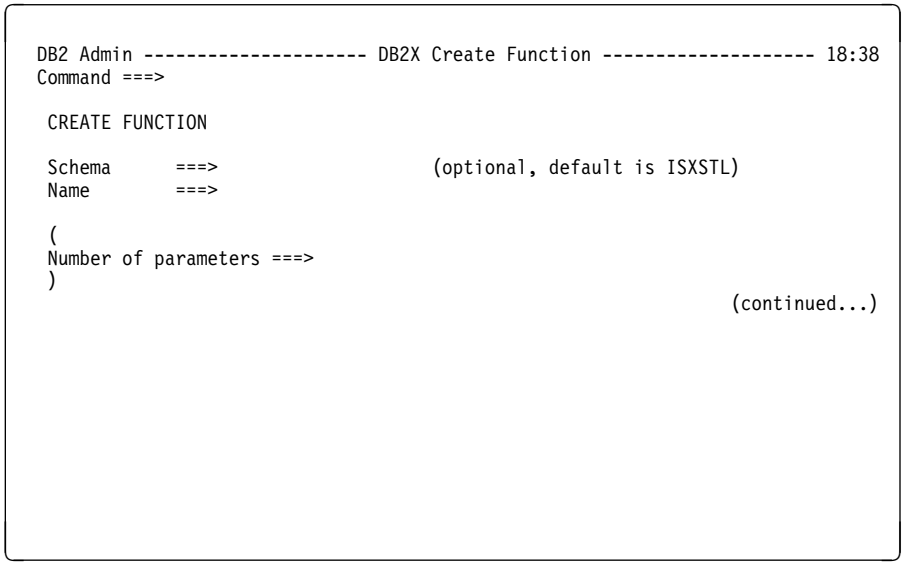


Figure 188. Create Function Panel (ADB26CF)

Display Function Statistics Panel

This panel (Figure 189) appears when you select option 3 on the Manage Functions panel.

This panel displays statistics about external user-defined functions accessed by DB2 applications.

DB2 Admin does this function by issuing the -DIS FUNCTION SPEC(*.*) command. See DB2 documentation for an explanation of the -DIS FUNCTION SPEC(*.*) command and its output.

```
 DB2 Admin ------- DB2X Browse DB2 Command Output ---  Line 00000000 Col 001 080
 Command ===>                                                 Scroll ===> PAGE

 -DIS FUNCTION SPEC(*.*)


******************************** Top of Data ********************************
DSNX975I DB2X DSNX9DIS DISPLAY FUNCTION SPECIFIC REPORT FOLLOWS -
FUNCTION           STATUS ACTIVE QUEUED MAXQUE TIMEOUT   WLM_ENV
APPL1              STARTED     1      0      0       0   PAYROLL
APPL2              STARTED     1      0      0       0   PAYROLL
APPL3              STARTED     0      1      2       0   PAYROLL
APPL5              STOPREJ     0      0      0       0   SANDBOX
APPL6              STOPABN     0      0      0       0   PAYROLL
FUNC1              STOPQUE     0      0      0       0   SANDBOX
DSNX9DIS DISPLAY FUNCTION SPECIFIC REPORT COMPLETE
DSNX975I - DSNX9DIS DISPLAY FUNCTION SPECIFIC REPORT FOLLOWS -
******************************** Bottom of Data ********************************
```

Figure 189. Display Function Statistics Panel (ADB2DB2O)

Start All Functions Panel

This panel (Figure 190) appears when you select option 4 on the Manage Functions panel.

Use this function to activate all external functions that are stopped.

DB2 Admin does this function by issuing the -STA FUNCTION SPEC(*.*) command. See DB2 documentation for an explanation of the -STA FUNCTION SPEC(*.*) command and its output.

```
DB2 Admin ------- DB2X Browse DB2 Command Output ---  Line 00000000 Col 001 080
Command ===>                                                Scroll ===> PAGE

-STA FUNCTION SPEC(*.*)


******************************** Top of Data ********************************
DSNX973I DB2X DSNX9ST2 START FUNCTION SPECIFIC SUCCESSFUL FOR *.*
DSN9022I DB2X DSNX9COM '-START FUNC' NORMAL COMPLETION
******************************** Bottom of Data *****************************
```

Figure 190. Start All Functions Panel (ADB2DB2O)

Stop All Functions Panel

This panel (Figure 191) appears when you select option 5 on the Manage Functions panel.

Use this function to stop all external user-defined functions.

DB2 Admin does this function by issuing the -STO FUNCTION SPEC(*.*) command. See DB2 documentation for an explanation of the -STO FUNCTION SPEC(*.*) command and its output.

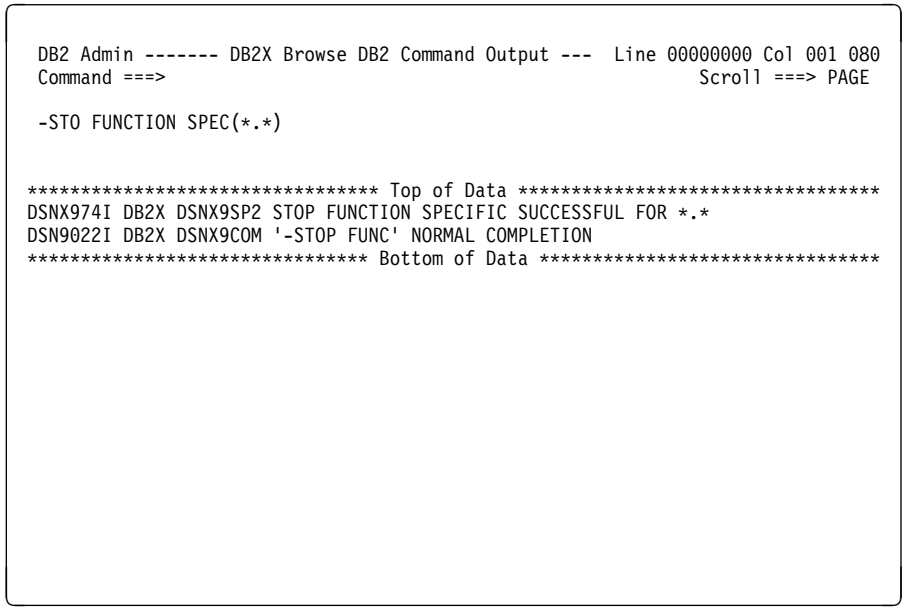


Figure 191. Stop All Functions Panel (ADB2DB2O)

Create View on SYSIBM.SYSROUTINES Panel

This panel (Figure 192) appears when you select option 6 on the Manage Functions panel.

Use this panel to create a view of the user-defined functions in SYSIBM.SYSROUTINES. This is useful if you want to let people administer their own functions. This panel lets you define a view for all procedures with the (LIKE) pattern you define.

For example, you can define view ABC.FUNCTIONS as a view on SYSIBM.SYSROUTINES WHERE SCHEMA LIKE 'ABC%'. View ABC.FUNCTIONS will contain all user-defined functions in schemas starting with ABC.

At the same time as you create the view, you can GRANT SELECT, INSERT, UPDATE, and DELETE on the view to a list of authorization ids (grantees).

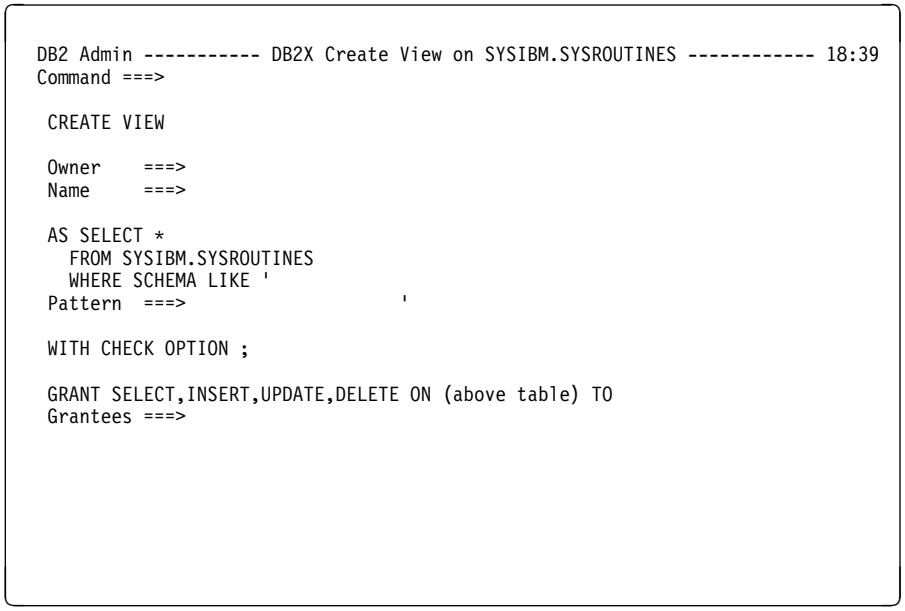


Figure 192. Create View on SYSIBM.SYSROUTINES Panel (ADB2ZF6)

Display Views on SYSIBM.SYSROUTINES Panel

This panel (Figure 193) appears when you select option 7 on the Manage Functions panel.

This panel displays the views that are created on SYSIBM.SYSROUTINES.

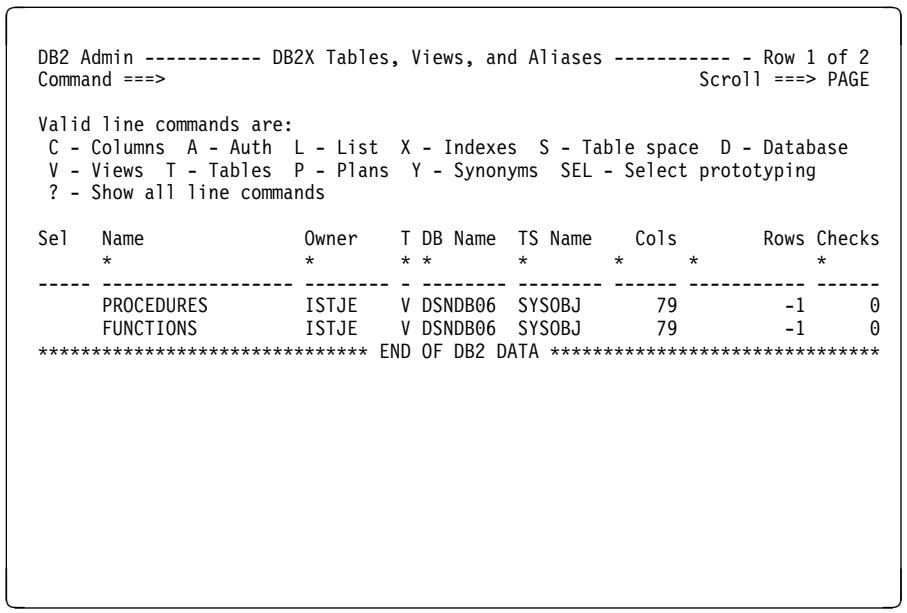


Figure 193. Display Views on SYSIBM.SYSROUTINES Panel (ADB21T)

The panel being displayed is the same panel you get if you use option 1.T and option Z.PM.7.

Chapter 15. Writing or Extending DB2 Admin Applications

You can create your own applications and tools using DB2 Admin, or you can extend existing applications. Examples of the types of applications you might create or extend are described in the introduction.

This chapter contains the information you need to know to do these tasks. (The information is the same for both creating and extending applications.)

Application Development Process

The flexibility of DB2 Admin lets you easily extend its functions. You can, for example, add new line commands to existing panels, or you can develop new applications using DB2 Admin as the dialog driver and interface to DB2.

If you want to **extend** DB2 Admin functions, you can add new function to a **copy** of one or more of the panels supplied with the product. We recommend that you use the existing code in the panel you are modifying as a template, and make the necessary changes for the new function. When you complete your modifications, change the DB2 Admin source by creating an SMP/E usermod; this is so changes are not lost if PTFs are applied to the product.

If you want to develop a **new**, independent application, use the sample application panels described in the next section as templates.

Sample Application

DB2 Admin includes a sample application as part of the product. The sample shows how you can use DB2 Admin to create your own applications.

The sample application consists of three ISPF panel source members located in library SADBPLIB. Their names are ADB2S, ADB2S1, and ADB2SU. You may want to look at these ISPF panel source members as an aid to understanding the rest of this chapter.

The sample application shows how to maintain a small DB2 table called USER. The columns in the USER table are:

```
USERID      CHAR(08) NOT NULL
EMPNAME     CHAR(30) NOT NULL
EMPLNO      CHAR(05) NOT NULL
COMMENTS    CHAR(30) NOT NULL
```

You can access the sample application from the DB2 Administration Menu panel (see Figure 45 on page 59) by specifying "hidden" option S (it does not appear in the list of options). Figure 194 on page 256 appears.

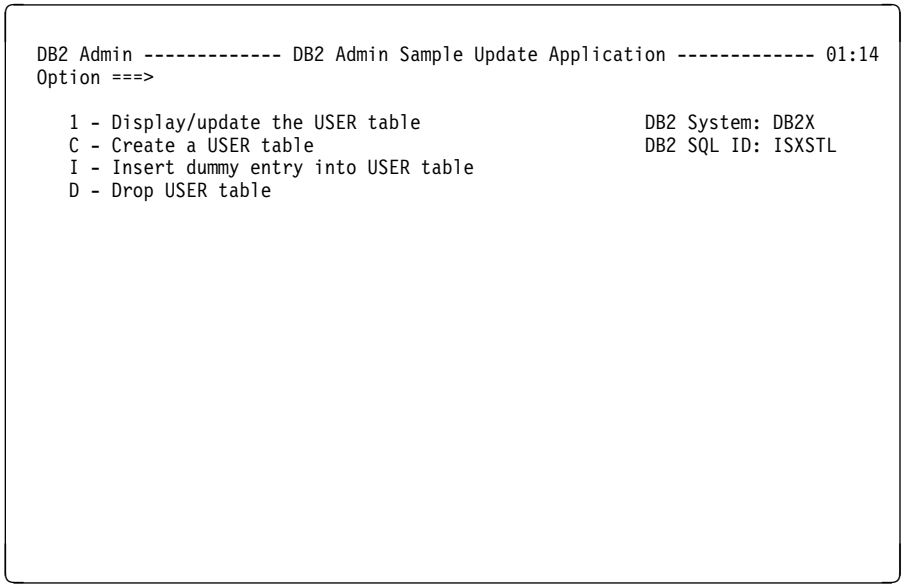


Figure 194. DB2 Admin Sample Update Application Panel (ADB2S)

Option C on the Sample Update Application panel creates the table sqlid.USER (in default data base DSNDB04).

Option I inserts a dummy row into the table, so it is possible to display or update the table using option 1.

Option 1 displays the USER table. From this display, you can use line commands I, U, and D to insert, update, and delete rows.

Option D drops the table.

Types of Panels

Regardless of whether you are creating or extending DB2 Admin applications, the process involves creating ISPF panels that specify how DB2 Admin should do SQL processing and dialog control.

The panels you create are usually one of the following types:

- Menu Panels. These panels are typically at the top of a hierarchy of other panels. Menu panels specify the options that are available to the user.
- Table Display Panels. These are ISPF table display panels on which data from DB2 or ISPF tables is displayed.
- Data Entry Panels. On these panels, a user enters data that is input to a DB2 SQL statement, DB2 command, or DB2 Admin CLIST.
- Help Panels. These are standard ISPF help panels to guide the user in doing a task.

For a new application, you will typically need to develop a menu panel and a number of data entry and table display panels.

Setting Variables On Your Panels

You control DB2 Admin processing by setting variables on the panels. During processing, DB2 Admin looks at the variables and then does its processing. If no variables are set, DB2 Admin just redisplays the panel.

You can set the following variables on the panels:

PANEL The name of the next panel DB2 Admin should display. If this variable is used with an SQL SELECT statement, the next panel should be an ISPF table display panel that shows the rows returned by DB2. On a menu panel, set the PANEL variable to the panel name DB2 Admin should display for a particular choice.

SQLSTMT Any SQL statement DB2 can execute. If the statement is an SQL SELECT, DB2 Admin creates an intermediate ISPF table, fetches the rows, adds the rows to the ISPF table, and shows the result on the specified PANEL. If no panel is specified, the default table display panel is shown. Multiple SQL statements can be specified; they must be separated by a semicolon (;).

ISPFSTMT Any ISPF statement that can be executed by the ISPEXEC ISPF API. This variable is useful for invoking your own CLISTs, EXECs, or other TSO/ISPF applications. Multiple statements can be specified; they must be separated by a semicolon (;).

DB2ACMD Any DB2 Admin primary command (which includes DB2 commands, ISPF statements, and SQL statements). DB2 Admin primary commands are described in “Primary Commands” on page 31. Multiple statements can be specified; they must be separated by a semicolon (;).

DB2 Admin Processing

After a panel is displayed, DB2 Admin examines the variables and does the following processing:

1. If the user presses END, returns to the previous panel.
2. If variable ISPFSTMT is set, processes all ISPF statements first.
3. If variable SQLSTMT is set, processes the SQL statements one by one. If DB2 returns rows, displays the result on the panel named in the variable PANEL. If the variable PANEL is not set, uses the default panel.
4. If the variable PANEL is set, displays the panel.
5. If the variable DB2ACMD is set, processes the DB2 Admin commands.

The process that DB2 Admin follows is shown in Figure 195 on page 258.

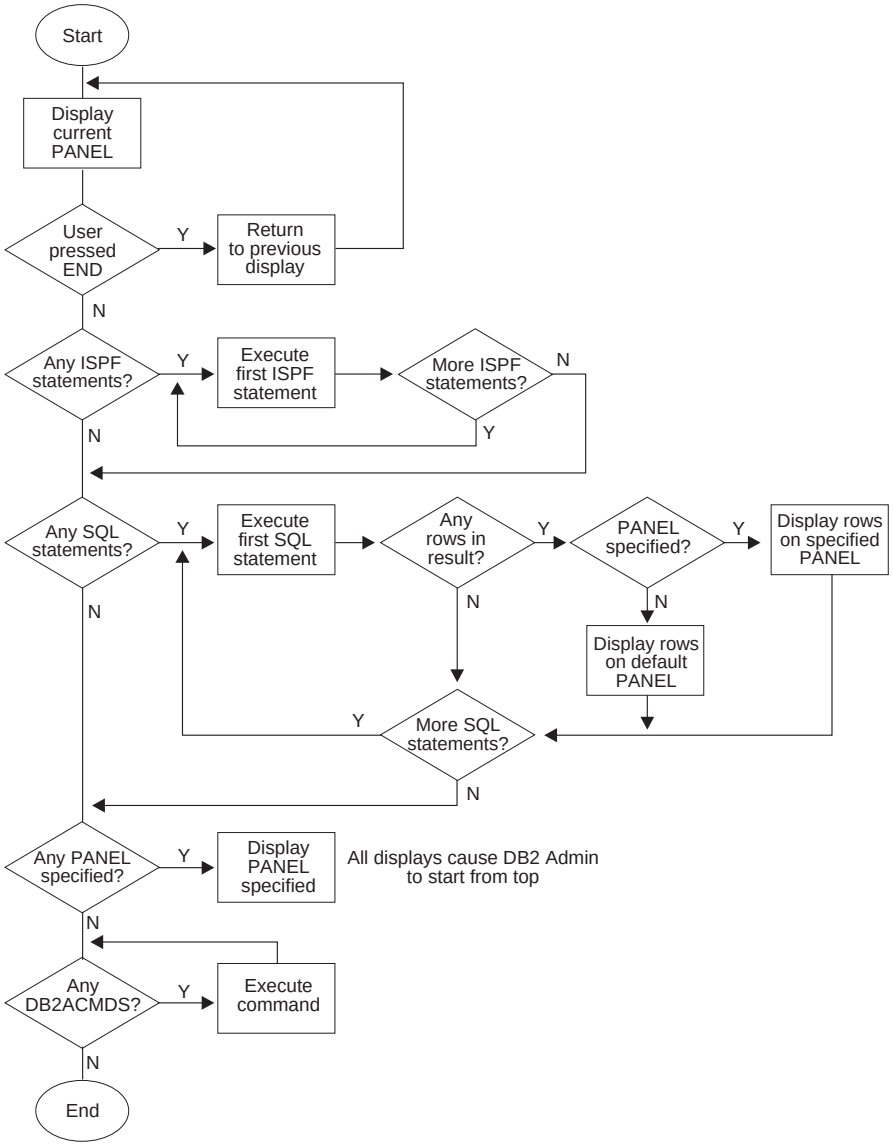


Figure 195. DB2 Admin Logic

Naming Your Panels

You can use DB2 Admin panels as a model to create your own panels. However, use a different prefix in your panel names.

DB2 Admin panels have the prefix ADB2. The suffix normally identifies the option you selected to get to the panel. For example, ADB21T is the panel for option 1 on the DB2 Administration Menu and option T on the following panel.

The corresponding HELP panels have the same name but use the prefix ADBH.

Using the DB2 Admin CLIST

If you have created a new independent application, you can use the DB2 Admin CLIST (ADB) to invoke it. Invoke the CLIST using the following parameters:

PANEL(panel) Name of the first panel to be shown.

SYSTEM(name) DB2 subsystem that is to be used.

For example, to start DB2 Admin with your own customized panel, invoke the CLIST as follows: `%ADB PANEL(yourpanel)`

Updating Rows Using SQL

If your DB2 Admin application will update rows using SQL, do the updates on a separate panel. Otherwise you end up with a copy of the data on the table display panel, but updated data in DB2. When you use a separate panel for updates, DB2 Admin automatically refreshes the data in the table display panel when DB2 data changes.

Also, DB2 Admin does an SQL COMMIT before each display, so if you have concurrent users of your application, you should probably have a timestamp for the latest updates to rows.

If you are updating rows using SQL, consider using the structure shown in Figure 196 on page 260 for your DB2 Admin application.

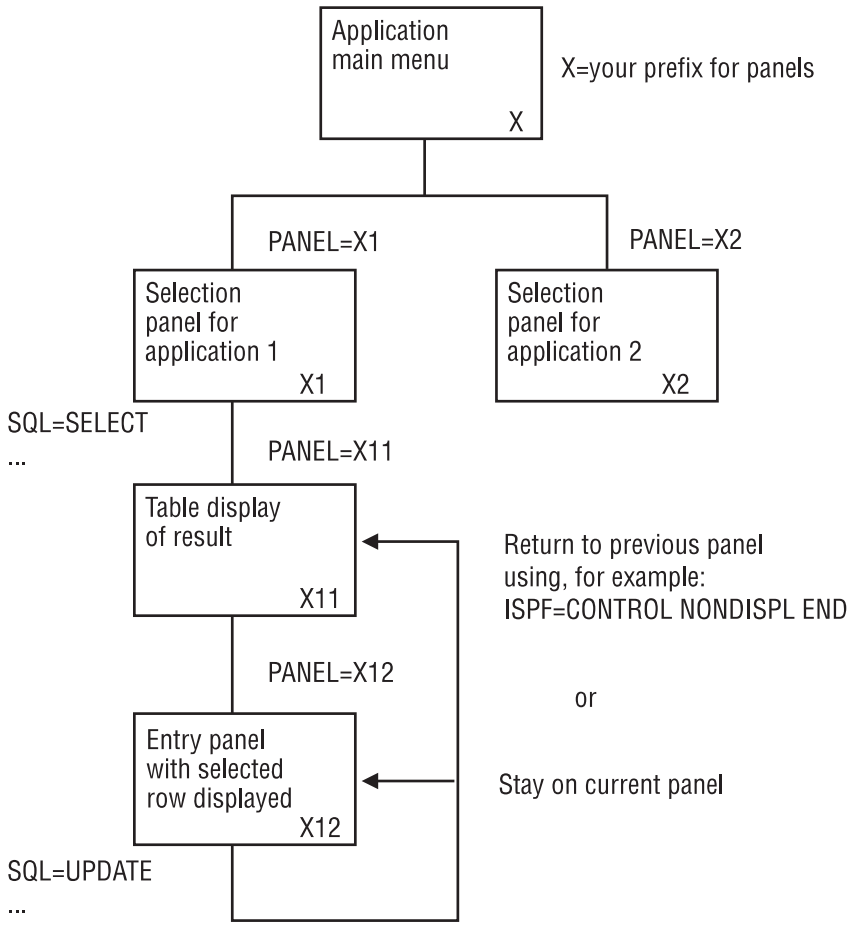


Figure 196. Sample Application Structure

Using Variables in Your Application

There are two types of variables available for you to use in your DB2 Admin application:

- General DB2 Admin variables
- Variables containing column values, set as a result of an SQL SELECT and a line command that selected the row.

All variables are located in the ISPF function pool.

General DB2 Admin Variables

The general DB2 Admin variables are as follows:

DB2SYS DB2 system ID. Set by the DB2 Admin CLIST.

DB2AUTH Current DB2 authorization ID.

MAXROWS Maximum number of rows to fetch. The default is 1000.

DLEVEL Display level. Increased by one for each nested display.

Variables Containing Column Values

After an SQL SELECT statement is executed, DB2 Admin defines a variable for each column of the result. (This is done using the ISPF VDEFINE service.) These variables are, therefore, available to your application. When you select a row, the content of the column variables have the values for that row.

The names of column variables are the same as DB2 column names except:

- ISPF variable names have a maximum of eight characters. If the DB2 column name is longer than that, it is truncated to eight characters. For example, the DB2 column name CLUSTERTYPE has the ISPF name CLUSTERT.
- Special characters, such as underscores in DB2 column names, are replaced by @. For example, DB2 column name EMPL_NAME has the ISPF name EMPL@NAM.
- If there are any duplicate column names in the result, all but the first duplicate column name are given ISPF name DUP0001, DUP0002, and so on. For example, SELECT CREATEDBAAUTH,CREATEDBCAUTH FROM SYSIBM.SYSUSERAUTH is given ISPF names CREATEDB and DUP0001.
- All DB2 SELECT expressions are given ISPF names COL0001, COL0002, and so on. For example, SELECT CURRENT DATE is given ISPF name COL0001.
- Table search argument variables are named in the same way as ISPF names, but they are truncated to seven characters and given the prefix @. Duplicates are named @DUP0001, @DUP0002, and so on.

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Special Characters

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DB2 Administration Tool for OS/390
User's Guide
Version 6

Publication No. SC26-8947-00

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