

# Interactive SQL

The **Interactive SQL** function of the **Natural Tools for DB2** enables you to execute SQL statements dynamically.

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## Invoking the Interactive SQL Function

▶ To invoke the Interactive SQL function

- On the **Natural Tools for DB2 Main Menu**, enter function code I.

The **Interactive SQL** screen is displayed:

```

16:21:04          ***** NATURAL TOOLS FOR DB2 *****          2009-10-30
                      - Interactive SQL -

                                Code  Function
                                ----  -
                                I    SQL Input Member
                                O    Data Output Member
                                ?    Help
                                .    Exit
                                ----  -
Code.. _  Library .. SAG_____
          Member ... _____

Command ==>>
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      Help           Exit                                     Canc

```

The following functions are available:

Code	Description
I	Displays SQL members in the interactive SQL input screen.
O	Displays output members in the interactive SQL output screen.

The following parameters can be specified:

Parameter	Description
Library	Specifies the name of the current Natural library which contains the specified input/output members. Specification of libraries whose names begin with SYS is not allowed. The library name is preset with your Natural user ID.
Member	<p>If a valid member name is specified, the corresponding member is displayed.</p> <p>If a value is specified followed by an asterisk (*), all input/output members in the current library whose names begin with this value are listed.</p> <p>If asterisk notation is specified only, a selection list of all input/output members in the current library is displayed.</p> <p>If the <b>Member</b> field is left blank, the empty SQL input/output screen is displayed.</p>

## SQL Input Members

### To invoke the SQL Input Member function

1. On the **Interactive SQL** screen, enter function code I and press Enter.

Depending on what member name you have specified, different screens are displayed.

These screens are explained in the following sections.

### ISQL Input Screen

If you leave the **Member** field blank, the empty **ISQL - Input** screen is invoked:

```

16:21:56          ***** NATURAL TOOLS FOR DB2 *****          2009-10-30
ISQL - Input      SAG          S 01- -----Columns 001 072
====>          Scroll ==> PAGE
***** ***** top of data *****
////////
////////
////////
////////
////////
////////
////////
////////
////////
////////
////////
////////
////////
////////
////////
////////
////////
////////
////////
***** ***** bottom of data *****

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      Help  Setup Exit  Exec  Rfind Rchan -    +    Outpu          Canc

```

The **ISQL - Input** screen is a free-mode editor (see *Editing within the Natural Tools for DB2*) which provides a functionality similar to the one of the Software AG Editor. Using the editor you can enter or edit SQL statements via editor main and line commands. You can execute the SQL statements immediately from within the editor by pressing PF4 (Exec), or you can save them as an SQL member in a Natural library for later execution.

For information on the PF keys available, see *PF Key Settings*.

**Note:**

The PRINT command is not available in the SQL input screen.

Apart from the editor main and line commands, SQL code maintenance commands are also available to maintain SQL members in a Natural library; see *Global Maintenance Commands*. With these maintenance commands, input members can be listed, retrieved, saved in a Natural library, copied, and purged. They are entered in the command line of the input screen.

You can also obtain a list of the available maintenance commands by entering the help character, that is, a question mark (?), in the command line of the input screen. A window is displayed from which the desired command can be selected. The window can be scrolled forwards by pressing PF8, or backwards by pressing PF7.

```

12:22:12          ***** NATURAL TOOLS FOR DB2 *****          2009-10-30
ISQL - Input      SAG          S 01- -----Columns 001 072
====> ?          Scroll ====> PAGE
*****
!
!   _ List <*,member>      !
!   _ READ <member>       !
!   _ SAVE <member>       !
!   _ COPY <member>       !
!   _ Purge <member>      !
!   _ LIBrary <library>   !
!   _ SElect <TB,CO> name1 name2 !
!
!-----+
*****
***** bottom of data *****
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      Help  Setup Exit  Exec  Rfind Rchan -      +      Outpu      Canc
    
```

To assist you in coding your SQL member, existing DB2 tables and columns can be listed using the SELECT command. From the list, you can include table and column names into the editor.

The SELECT command is available for table and column selection:

Command	Description
<b><u>SELECT TABLE</u></b> [creator.]name	<p>Selects all tables with the specified creator (optional) and name.</p> <p>For both <i>creator</i> and <i>name</i>, you can specify a value followed by an asterisk (*), and all tables whose names begin with this value are selected.</p> <p>.</p> <p>If you specify asterisk notation only, all existing tables are selected.</p> <p>If you specify a table name without a creator, all tables with the specified name are selected, regardless of their creator.</p>
<b><u>SELECT COLUMN</u></b> creator.name	<p>Selects all columns of the table <i>creator.name</i>.</p> <p>Since the table must be uniquely identified, asterisk notation cannot be used.</p>

### Sample Input Screen with Table Listing Window

```

12: +-----+
ISQ ! Tab:                                     !
==== ! SYSIBM.*                               !
*** !   Table Name                           Creator      !
''' ! _ SYSDATABASE                          SYSIBM        !
''' ! _ SYSDATATYPES                          SYSIBM        !
''' ! _ SYSDBAUTH                             SYSIBM        !
''' ! _ SYSDBRM                               SYSIBM        !
''' ! _ SYSDUMMY1                             SYSIBM        !
''' ! _ SYSDUMMYA                             SYSIBM        !
''' ! _ SYSDUMMYE                             SYSIBM        !
''' ! _ SYSDUMMYU                             SYSIBM        !
''' ! _ SYSFIELDS                             SYSIBM        !
''' ! _ SYSFORIGNKEYS                         SYSIBM        !
''' ! _ SYSINDEXES                            SYSIBM        !
''' ! _ SYSINDEXES_HIST                       SYSIBM        !
''' ! _ SYSINDEXPART                          SYSIBM        !
''' ! _ SYSINDEXPART_HIST                     SYSIBM        !
''' ! _ SYSINDEXSTATS                         SYSIBM        !
''' ! _ SYSINDEXSTATS_HIST                     SYSIBM        !
*** ! _ SYSJARCLASS_SOURCE                     SYSIBM        !
    ! _ SYSJARCONTENTS                         SYSIBM        !
Ente !                                       !
+-----+

```

From the table list, you can select a table for display of its columns by marking it with C in front of the table name. The columns of a table are listed together with their type and length. A creator or table name longer than 32 characters will be truncated. This will be indicated by a > symbol at the end of the creator or table name.

### Sample Input Screen with Column Listing Window

```

12:27:08          ** +-----+
ISQL - Input      GGS ! Tab: SYSIBM.SYSTABLES          !
=====>         !                                       !
*****           !   Column Name                           Type      Len  !
A   SELECT       ! M NAME                               VARCHAR  128 !
00002 SYSIBM.SYSTABLES ! M CREATOR                           VARCHAR  128 !
*****           ! M TYPE                               CHAR      1  !
          ! M DBNAME                             VARCHAR  24  !
          ! M TSNAME                             VARCHAR  24  !
          ! _ DBID                               SMALLINT  2  !
          ! _ OBID                               SMALLINT  2  !
          ! _ COLCOUNT                         SMALLINT  2  !
          ! _ EDPROC                             VARCHAR  24  !
          ! _ VALPROC                             VARCHAR  24  !
          ! _ CLUSTERTYPE                         CHAR      1  !
          ! _ CLUSTERRID                        INTEGER   4  !
          ! _ CARD                               INTEGER   4  !
          ! _ NPAGES                             INTEGER   4  !
          ! _ PCTPAGES                          SMALLINT  2  !
          ! _ IBMREQD                             CHAR      1  !
          ! _ REMARKS                             VARCHAR  762 !
          ! _ PARENTS                          SMALLINT  2  !
Enter-PF1---PF2---PF3---P !                                       !
      Help Setup Exit E +-----+

```

If you want to copy table or column names from a selection list into the editor, mark the corresponding table or column with M as shown on the previous screen. The table or column names are copied either after or before the line marked with an A or a B respectively, or to the top of the displayed data.

### Sample Input Screen with Copied Column Names

```

12:29:44          ** +-----+
ISQL - Input      GGS ! Tab: SYSIBM.SYSTABLES          !
=====>         !                                     !
*****          ! Column Name                        Type      Len  !
A   SELECT      ! _ NAME                               VARCHAR  128 !
00002 NAME      ! _ CREATOR                                VARCHAR  128 !
00003 , CREATOR ! _ TYPE                                   CHAR      1  !
00004 , TYPE    ! _ DBNAME                                VARCHAR   24 !
00005 , DBNAME  ! _ TSNAME                                VARCHAR   24 !
00006 , TSNAME  ! _ DBID                                  SMALLINT  2  !
00007 SYSIBM.SYSTABLES ! _ OBID                                SMALLINT  2  !
*****          ! _ COLCOUNT                             SMALLINT  2  !
          ! _ EDPROC                                VARCHAR   24 !
          ! _ VALPROC                                VARCHAR   24 !
          ! _ CLUSTERTYPE                             CHAR       1  !
          ! _ CLUSTERRID                             INTEGER   4  !
          ! _ CARD                                    INTEGER   4  !
          ! _ NPAGES                                INTEGER   4  !
          ! _ PCTPAGES                             SMALLINT  2  !
          ! _ IBMREQD                                CHAR       1  !
          ! _ REMARKS                             VARCHAR  762 !
          ! _ PARENTS                             SMALLINT  2  !
Enter-PF1---PF2---PF3---P !                                     !
      Help Setup Exit E +-----+

```

### Fixed Mode with Interactive SQL

All fixed-mode input screens from the *Catalog Maintenance* part of the **Natural Tools for DB2** are available as help maps within the *Interactive SQL* part.

To invoke this help facility, enter the name of the SQL statement you want to create in the command line of your **ISQL - Input** screen, for example, CREATE TABLE or CR TB for the CREATE TABLE command.

The same command abbreviations apply as with the **Catalog Maintenance** function.

If you enter CREATE TABLE or CR TB, the **Create Table** screen is invoked:

```

01:22:12          ***** NATURAL TOOLS FOR DB2 *****          2009-10-30
                    - Create Table -                               1 / 9

>>- CREATE TABLE - SAG_____ . DEMOTABLE_____ ----->
                    <creator.>table-name
>+--- LIKE ----- _____ . _____ +-----+>
!                    <creator.>table/view-name +- _ - INCLUDING IDENTITY + +
!
+( COL1_____ CHAR_____ ( 20_____ ) _ - _ - _ - _ - _ - , +
+- COL2_____ INTEGER_____ ( _____ ) _ - NN - _ - 2_ - _ , +
+- COL3_____ SMALLINT_____ ( _____ ) _ - NN - _ - 1_ - _ , +
+- COL4_____ CHAR_____ ( 2_____ ) S - _ - _ - _ - _ - , +
+- COL5_____ VARCHAR_____ ( 30_____ ) _ - NN - _ - 3_ - _ , +
+- COL6_____ DECIMAL_____ ( 2,5_____ ) _ - _ - X - _ - _ - , +
+- COL7_____ FLOAT_____ ( _____ ) _ - NN - _ - _ - _ - , +
+- COL8_____ DATE_____ ( _____ ) _ - _ - _ - _ - _ - , +
+- COL9_____ TIME_____ ( _____ ) _ - _ - _ - _ - _ - , +
+- _____ ( _____ ) _ - _ - _ - _ - _ - , +
      column-name          format          length      S/M  NN  fld  PK/  R/C
                          B              proc  UK  D/G

Command ==>
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      Help  Error Exit  Exec  Free  --  -  +  ++          Next  Canc

```

If you have entered data for a complete SQL statement, you can generate an SQL statement from the entered data and include it into the **ISQL - Input** screen.

Using PF4 (Incl), you include the generated SQL code and remain on the **Create Table** screen.

Using PF5 (IBack), you include the generated SQL code and return to the **ISQL - Input** screen.

## Retrieve an SQL Member

If you specify a unique member name in the **Member** field of the **Interactive SQL** screen, the corresponding SQL member is listed on the input screen. If no member exists with the specified name, a corresponding message is returned.

### Sample SQL Member Listed in Input Screen

```

01:03:23          ***** NATURAL TOOLS FOR DB2 *****                2009-10-30
ISQL - Input      SAG(TESTSEQ)          S 01- -----Columns 001 072
====>                                         Scroll ==> PAGE
***** ***** top of data *****
00001 CREATE TABLE DEMOTABLE
00002   (COL1              CHAR(8) ,
00003   COL2              INTEGER
00004   ) IN DATABASE DEMO;
00005 INSERT INTO DEMOTABLE
00006   VALUES ('AAAAA',1);
00007 * INSERT INTO DEMOTABLE
00008 *   VALUES ('BBBBB',2);
00009 SELECT FROM DEMOTABLE;
00010 DROP TABLE DEMOTABLE;
***** ***** bottom of data *****

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      Help  Setup Exit  Exec  Rfind Rchan -      +      Outpu      Canc

```

Listed SQL members can be purged, modified, executed, or saved.

An asterisk (\*) in front of a statement line turns this line into a comment line, which means that the corresponding SQL code is not considered for execution.

## List of SQL Members

If you specify a value followed by an asterisk (\*) in the **Member** field of the **Interactive SQL** screen, a list of all SQL input members in the current library whose names begin with this value is displayed.

If you specify an asterisk (\*), a list of all SQL input members in the current library is displayed.

## Sample SQL Input Member Selection List



```

15:06:14          ***** NATURAL TOOLS FOR DB2 *****          2009-10-30
                          Select Member

      C      Member      Type      User      Date      Time
      -      - - - - -      - - - - -      - - - - -      - - - - -
      _      CRAXTB      SQL      SAG      2009-10-30  13:48:53
      _      CRDITY      SQL      SAG      2009-10-30  13:39:14
      _      CRPRQE      SQL      SAG      2009-10-30  13:54:21
      _      CRTB        SQL      SAG      2009-10-30  13:48:14
      _      CRTRIG      SQL      SAG      2009-10-30  13:53:01
      _      CRTRIG2     SQL      SAG      2009-10-30  13:14:10
      _      DRPRQE      SQL      SAG      2009-10-30  13:55:04
      _      DRPRQE2     SQL      SAG      2009-10-30  13:50:30
      _      GGSdtype    SQL      SAG      2009-10-30  13:52:10
      _      GRSHPR      SQL      SAG      2009-10-30  13:28:01
      _      RESHPR      SQL      SAG      2009-10-30  13:31:05
      _      SELPROCS    SQL      SAG      2009-10-30  13:09:05
      _      SELTABS     SQL      SAG      2009-10-30  13:56:22

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
Cont          Exit                                     >          Canc

```

From the input screen selection list, SQL members can be selected for display by marking them with an S.

If the list has been invoked by a PURGE command, members can be purged by marking them with a P.

By pressing PF11 (>), you can switch from the default view of the **Select Member** screen as shown above to the extended view with the first line of each member displayed in the **Description** column:

```

15:09:17          ***** NATURAL TOOLS FOR DB2 *****          2009-10-30
                          Select Member

      C      Member      Description (first line of member)
      -      - - - - -      - - - - -
      _      CRAXTB      CREATE AUXILIARY TABLE aux-table-name
      _      CRDITY      CREATE DISTINCT TYPE distinct-type-name
      _      CRPRQE      * ALL PROCEDURES FROM QARNDB31(10,110), WHICH HAVE 'C
      _      CRTB        CREATE TABLE NEWTYPE
      _      CRTRIG      CREATE TRIGGER trigger-name NO CASCADE BEFORE|
      _      CRTRIG2     CREATE TRIGGER trigger-name (NO CASCADE BEFORE|
      _      DRPRQE      * ALL PROCEDURES FROM QARNDB31(10,110), WHICH HAVE 'C
      _      DRPRQE2     DROP PROCEDURE CALLN2 RESTRICT;
      _      GGSdtype    SELECT COLTYPE,LENGTH,LENGTH2,DATATYPEID,SOURCETYPEID
      _      GRSHPR      GRANT ALTERIN [, CREATEIN] [, DROPIN]
      _      RESHPR      REVOKE ALTERIN [, CREATEIN] [, DROPIN]
      _      SELPROCS    SELECT * FROM SYSIBM.SYSPROCEDURES
      _      SELTABS     SELECT * FROM SYSIBM.SYSTABLES

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
Cont          Exit                                     <          Canc

```

The first line of a member can be the first line of an SQL statement or a comment line which provides more information on the member.

## Data Output Members

### ▶ To invoke the Data Output Member function

- On the **Interactive SQL** screen, enter function code O and press Enter.

Depending on what member name you have specified, different screens are displayed.

These screens are explained in the following sections.

### Data Output Screen

If you leave **Member** field of the **Interactive SQL** screen blank, the empty **ISQL - Output** screen is invoked.

```

15:19:15          ***** NATURAL TOOLS FOR DB2 *****                2009-10-30
ISQL - Output      SAG                      S 02- -----Columns 001 072
====>                                     Scroll ==>  PAGE
***** ***** top of data *****
***** ***** bottom of data *****

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      Help      Exit      Rfind Rchan -      +      <      >      Canc

```

From the data output screen you have access to output data members only. Output members consist of data retrieved from the database as a result of executed SQL statements. These data can be browsed and saved for later use as output members on the Natural system file FUSER. In addition to the data retrieved from the database, output members also contain DB2 status information, and the executed SQL member.

If you execute an SQL statement, the results are automatically shown on the output screen. Thus, you can enter the interactive SQL output screen also by executing an SQL statement from the input screen. From the output screen you can return to the input screen by pressing PF3 (Exit).

For information on the other PF keys available, see *PF Key Settings*.

The maintenance commands available for output members can be displayed and selected in a window, too; see *Global Maintenance Commands*. The window is invoked by entering the help character, that is, a question mark (?), in the command line of the output screen.

```

15:57:59          ***** NATURAL TOOLS FOR DB2 *****          2009-10-30
ISQL - Output      SAG          S 02- -----Columns 001 072
====> ?          Scroll ====> PAGE
*****          +-----+*****
*****          !*****
          !
          !  _ List <*,member>          !
          !  _ READ <member>          !
          !  _ SAve <member>          !
          !  _ Purge <member>          !
          !  _ LIBrary <library>          !
          !          !
          +-----+
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      Help      Exit      Rfind Rchan -      +      <      >      Canc

```

Apart from the maintenance commands, only browse commands are available (see *Editing within the Natural Tools for DB2*), since output members cannot be modified. Both browse and maintenance commands are entered in the command line of the output screen.

If an output member is too large to fit on your terminal screen, you can use the `FIX ON n` command to keep the first *n* characters on the screen when scrolling to the left or to the right.

## Retrieve an Output Member

If you specify a unique member name in the **Member** field of the **Interactive SQL** screen, the corresponding output member is listed on the output screen. If no member exists with the specified name, a corresponding message is returned.

### Sample Output Member Listed in Output Screen

```

16:27:12          ***** NATURAL TOOLS FOR DB2 *****                2009-10-30
ISQL - Output      SAG(TESTSEQO)          S 02- -----Columns 001 072
====>                                     Scroll ==>  PAGE
***** ***** top of data *****
00001 CREATE TABLE DEMOTABLE
00002   (COL1              CHAR(8),
00003   COL2              INTEGER
00004   ) IN DATABASE DEMO
00005 -----
00006 STATEMENT WAS SUCCESSFUL, SQLCODE = 0
00007 -----
00008 INSERT INTO DEMOTABLE
00009   VALUES ('AAAAA',1)
00010 -----
00011 STATEMENT WAS SUCCESSFUL, SQLCODE = 0
00012 -----
00013 SELECT FROM DEMOTABLE
00014 -----
00015 COL1              COL2
00016 -----
00017 AAAAA              1

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      Help          Exit          Rfind Rchan -      +          <      >      Canc

```

## List of Output Members

If you specify a value followed by an asterisk (\*) in the **Member** field of the **Interactive SQL** screen, a list of all data output members in the current library whose names begin with this value is displayed.

If you specify asterisk notation only, a list of all data output members in the current library is displayed.

## Sample Data Output Member Selection List

```

16:24:02          ***** NATURAL TOOLS FOR DB2 *****                2009-10-30
                                Select Member

      C   Member          Type          User          Date          Time
      -   -
      _   AAAA            SQL-RESULT  SAG            2009-10-30    13:54:54
      _   ADEMVIEW       SQL-RESULT  SAG            2009-10-30    14:01:09
      _   AIRCRAFT       SQL-RESULT  SAG            2009-10-30    10:01:32
      _   BBBB           SQL-RESULT  SAG            2009-10-30    15:25:14
      _   BSP1           SQL-RESULT  SAG            2009-10-30    14:57:11

```

From the output member selection list, output members can be selected for display by marking them with an S.

If the list has been invoked by a PURGE command, members can be purged by marking them with a P.

## Processing SQL Statements

SQL input members can only be accessed from the **ISQL - Input** screen. They are executed from the input screen against DB2 by pressing PF4 (Exec).

After execution, the data output screen appears which contains the results of the executed SQL member.

If an SQL member consists of more than one SQL statements, the individual statements must be separated by a semicolon. They can be executed one by one or all together at the same time.

To choose the form of execution, a window is provided which can be invoked by pressing PF2 (Setup).

```

16:29:12          ***** NATURAL TOOLS FOR DB2 *****          2009-10-30
ISQL - Input      SAG(TESTSEQ)          S 01- -----Columns 001 072
====>
***** ***** !
00001 CREATE TABLE DEMOTABLE          ! _ Execute statements one by one !
00002   (COL1                          CHAR(8 ! X Execute all statements together !
00003   COL2                          INTEGE ! !
00004   ) IN DATABASE DEMO;            ! _ Optional Commit/Rollback !
00005 INSERT INTO DEMOTABLE            ! X Automatic Commit/Rollback !
00006   VALUES ('AAAAA',1);          ! !
00007 * INSERT INTO DEMOTABLE          ! _ Ignore positive SQL codes !
00008 *   VALUES ('BBBBB',2);        ! !
00009 SELECT FROM DEMOTABLE;           ! Text for NULL values : <NULL>__ !
00010 DROP TABLE DEMOTABLE;           ! Sql termination character : ; !
***** ***** b ! Maximum length of columns : _____ !
! Maximum number of rows : _____ !
! DB2 cost limit : _____ !
! !
! Header Line every 15__ Data Lines !
! Record Length Data Session: _250 !
! !
Enter-PF1---PF2---PF3---PF4---PF5---PF+-----+
      Help Setup Exit Exec Rfind Rchan - + Outpu Canc

```

Below is information on the options provided:

- Execute Statements One By One
- Execute All Statements Together
- Automatic Commit/Rollback
- Optional Commit/Rollback
- Text For NULL Values
- SQL Termination Character
- Maximum Length of Columns
- Maximum Number of Rows

- DB2 Cost Limit
- Header Line Every n Data Lines
- Record Length Data Session

## Execute Statements One By One

After each SQL statement the output screen is shown. From the output screen, you can either execute the next SQL statement from the input screen by pressing PF4 (Next), or skip the remaining SQL statements and return to the input screen immediately by pressing PF3 (Exit).

## Execute All Statements Together

All statements are executed immediately one after the other. The output screen shows the results of all statements together.

Statements containing cursor names, host variables, or parameter markers cannot be executed with interactive SQL. Also not executed are statements available as embedded SQL only; that is, statements whose functions are automatically performed by Natural.

These statements are:

CLOSE
CONNECT
DECLARE
DELETE WHERE CURRENT OF CURSOR
DESCRIBE
EXECUTE
FETCH
INCLUDE
OPEN
PREPARE
SELECT INTO
SET <i>host-variable</i>
SET CURRENT PACKAGESET
UPDATE WHERE CURRENT OF CURSOR
WHENEVER

## Automatic Commit/Rollback

If you select **Automatic Commit/Rollback**, each modification of the database is automatically either committed or rolled back, depending on whether all the SQL statements involved execute successfully. If so, an SQL COMMIT WORK command is executed; if not, an SQL ROLLBACK command backs out all database modifications since the last commit point.

## Optional Commit/Rollback

If you select **Optional Commit/Rollback**, a window is invoked after each SQL statement, offering you the option to either commit or roll back the resulting database modifications shown on the screen.

### Note:

Since under CICS and IMS TM each terminal I/O results in a SYNCPOINT, the optional commit/rollback feature only applies in a TSO environment.

In all environments, you can include SQL COMMIT and ROLLBACK commands in your input member, too. Under CICS and IMS TM, however, these commands are translated into the corresponding TP-monitor calls.

## Text For NULL Values

The text that is to be shown for NULL values can be specified here; the default string is ---.

## SQL Termination Character

If you enter multiple SQL statement, they need to be separated. The default statement termination character is the semi-colon (;).

## Maximum Length of Columns

Limits the length for a single column to  $n$  characters. This limit only applies to character data. DATE, TIME, or NUMERIC columns are not truncated. The value 0 indicates that no limit exists.

## Maximum Number of Rows

Limits the number of rows returned by one SELECT statement. The value 0 indicates that no limit exists.

## DB2 Cost Limit

Sets a limit for the DB2 cost estimate. SELECT statements which exceed this limit are not executed. The value 0 indicates that no limit exists.

## Header Line Every $n$ Data Lines

For SELECT statements, you can specify that every  $n$  data lines a header line is inserted with the names of the selected columns. If  $n$  is set to 0, only one header line is displayed at the top of the data.

## Record Length Data Session

The record length ( $n$ ) for the output session can be specified. If the specified record length is smaller than the record length of the output data, the output records are truncated accordingly. The truncation of records is indicated by a greater than character (>) as the leftmost character in the first line beneath each header line. The default value for  $n$  is 250 bytes.

## PF-Key Settings

The following PF-key settings apply to the **ISQL - Input** screen:

Key	Setting	Function
PF2	Setup	Invokes a window with further processing options.
PF4	Exec	Executes the SQL member currently in the input screen.
PF5	Rfind	Repeats the last executed FIND command.
PF6	Rchan	Repeats the last executed CHANGE command.
PF7	-	Scrolls the display one page backward.
PF8	+	Scrolls the display one page forward.
PF9	Outpu	Invokes the output member selection list directly from within the input screen.

Apart from PF2 (Setup), PF4 (Exec), and PF9 (Outpu), the same PF-key settings apply to the **ISQL - Output** screen, too. In addition, the following PF-key settings are available:

Key	Setting	Function
PF4	Next	Executes the next SQL statement if an SQL member consists of more than one statement, and if you have chosen to execute them one after the other. If not, the setting for PF4 is left blank.
PF10	<	Scrolls the display of the output screen to the left.
PF11	>	Scrolls the display of the output screen to the right.

## Unloading Interactive SQL Results

Results from interactive SQL are unloaded and written to a dataset referred to by DD name CMWKF01 in batch mode using the UNLDDATA command.

CMWKF01 should be of variable record format; the record length depends on the size of the SQL output member and can range from 250 to 4000 bytes.

### To unload results from interactive SQL

1. Logon to the Natural system library SYSDB2.



- In the command line, enter the command UNLDDATA and press ENTER.

The **Unload SQL Results** menu is displayed:

```

16:53:20          ***** NATURAL TOOLS FOR DB2 *****          2009-10-30
                   - Unload SQL Results -

                                Code Function
                                -----
                                U   Unload SQL Results
                                .   Exit
                                -----
Code .. _   Library .. _____
            Member ... _____

Command ==>
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
            Exit                                                    Canc
    
```

The following function is available:

Code	Description
U	Unloads results from interactive SQL execution.

The following parameters apply:

Parameter	Description
Library	Specifies the name of the Natural library from which the specified output members are to be unloaded. You cannot specify libraries whose names begin with SYS.  This parameter must be specified.
Member	Specifies the name(s) of the output member(s) to be unloaded.  This parameter must be specified.