NDB - Interactive SQL

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

- Invoking the Interactive SQL Function

- SQL Input Members

- Data Output Members

- Processing SQL Statements

- PF-Key Settings

- Unloading Interactive SQL Results

Invoking the Interactive SQL Function

▶ To invoke the Interactive SQL function

- Enter function code "I" on the Natural Tools for DB2 Main Menu.

The Interactive SQL screen is displayed:

```
 16:21:04              ***** NATURAL TOOLS FOR DB2 *****            2006-05-24
                             - 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	If a valid member name is specified, the corresponding member is displayed. 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. If asterisk notation is specified only, a selection list of all input/output members in the current library is displayed. If the Member field is left blank, the empty SQL input/output screen is displayed.

SQL Input Members

To invoke the SQL Input Member function enter function code "I" on the Interactive SQL screen. Depending on what member name you have specified, different screens are displayed.

SQL Input Screen

If you leave the Member field blank, the empty SQL input screen is invoked:

```
 16:21:56                ***** NATURAL TOOLS FOR DB2 *****              2006-05-24
  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 SQL input screen is a free-mode editor 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.

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. 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 "?" 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.

```
 10:57:06                ***** NATURAL TOOLS FOR DB2 *****            2006-05-24
  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, exisiting 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
SELECT TABLE [*creator.*]*name*	Selects all tables with the specified creator (optional) and name. For both *creator* and *name*, you can specify a value followed by an asterisk (*), and all tables whose names begin with this value are selected. If you specify asterisk notation only, all existing tables are selected. If you specify a table name without a creator, all tables with the specified name are selected, regardless of their creator.
SELECT COLUMN *creator.name*	Selects all columns of the table "*creator.name*". Since the table must be uniquely identified, asterisk notation cannot be used.

Sample Input Screen with Table Listing Window

```
09: +----------------------------------------------------------------------+
 ISQ ! Tab:                                                               !
==== ! SYSIBM.*                                                           !
 *** !    Table Name                        Creator                      !
 ''' ! _ SYSDATABASE                        SYSIBM                        !
 ''' ! _ SYSDATATYPES                       SYSIBM                        !
 ''' ! _ SYSDBAUTH                          SYSIBM                        !
 ''' ! _ SYSDBRM                            SYSIBM                        !
 ''' ! _ SYSDUMMY1                          SYSIBM                        !
 ''' ! _ SYSDUMMYA                          SYSIBM                        !
 ''' ! _ SYSDUMMYE                          SYSIBM                        !
 ''' ! _ SYSDUMMYU                          SYSIBM                        !
 ''' ! _ SYSFIELDS                          SYSIBM                        !
 ''' ! _ SYSFOREIGNKEYS                     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 '>' at the end of the creator or table name.

Sample Input Screen with Column Listing Window

```
  09:59:17              ** +----------------------------------------------------+
 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 "A" or "B" respectively, or to the top of the displayed data.

Sample Input Screen with Copied Column Names

```
  09:59:17              ** +----------------------------------------------------+
 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 SQL input screen, for example, "CREATE TABLE" or "CR TB" for the CREATE TABLE command.

The same command abbreviations apply as with the Catalog Maintenance.

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

```
  09:47:19                 ***** NATURAL TOOLS FOR DB2 *****           2006-05-24
                              - 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 SQL 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 SQL 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

```
 16:27:12                 ***** NATURAL TOOLS FOR DB2 *****              2006-05-24
  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, 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

```
 13:57:15              ***** NATURAL TOOLS FOR DB2 *****              2006-05-24
                              Select Member

      C        Member       Type          User        Date        Time
      -        --------      -----------   --------    ----------  --------
      _        CRAXTB       SQL           SAG         2006-05-24  13:48:53
      _        CRDITY       SQL           SAG         2006-05-24  13:39:14
      _        CRPRQE       SQL           SAG         2006-05-24  13:54:21
      _        CRTB         SQL           SAG         2006-05-24  13:48:14
      _        CRTRIG       SQL           SAG         2006-05-24  13:53:01
      _        CRTRIG2      SQL           SAG         2006-05-24  13:14:10
      _        DRPRQE       SQL           SAG         2006-05-24  13:55:04
      _        DRPRQE2      SQL           SAG         2006-05-24  13:50:30
      _        GGSDTYPE     SQL           SAG         2006-05-24  13:52:10
      _        GRSHPR       SQL           SAG         2006-05-24  13:28:01
      _        RESHPR       SQL           SAG         2006-05-24  13:31:05
      _        SELPROCS     SQL           SAG         2006-05-24  13:09:05
      _        SELTABS      SQL           SAG         2006-05-24  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:

```
 14:14:20              ***** NATURAL TOOLS FOR DB2 *****              2006-05-24
                              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, enter function code "O" on the Interactive SQL screen. Depending on what member name you have specified, different screens are displayed.

Data Output Screen

If you leave Member field blank, the empty SQL output screen is invoked.

```
 16:29:35               ***** NATURAL TOOLS FOR DB2 *****            2006-05-24
  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).

The maintenance commands available for output members can be displayed and selected in a window, too. The window is invoked by entering the help character "?" in the command line of the output screen.

```
 10:57:59              ***** NATURAL TOOLS FOR DB2 *****              2006-05-24
  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, 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 *****              2006-05-24
  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 *****              2006-05-24
                              Select Member


      C      Member      Type         User       Date        Time
      -      --------    -----------  --------    --------    -----------
      _      AAAA        SQL-RESULT   SAG         2006-05-24  13:54:54
      _      ADEMVIEW    SQL-RESULT   SAG         2006-05-24  14:01:09
      _      AIRCRAFT    SQL-RESULT   SAG         2006-05-24  10:01:32
      _      BBBB        SQL-RESULT   SAG         2006-05-24  15:25:14
      _      BSP1        SQL-RESULT   SAG         2006-05-24  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 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).

```
 16:27:12              ***** NATURAL TOOLS FOR DB2 *****              2006-05-24
  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 *host-variable*
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 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 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.

If UNLDDATA is issued in the Natural system library SYSDB2, the Unload SQL Results menu is displayed:

```
 16:53:20                 ***** NATURAL TOOLS FOR DB2 *****               2006-05-24
                              - 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.