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**

- 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	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

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 *****************************
   ,,,,,
   ,,,,,
   ,,,,,
   ,,,,,
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   ,,,,,
   ,,,,,
   ,,,,,
   ,,,,,
   ,,,,,
   ,,,,,
   ,,,,,
   ,,,,,
   ***** *************************** 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 Maintenenance 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
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

```
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                        !
 ''' ! _ 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 > 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 Maintenenance 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   **Interactive SQL**

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

13

- 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 **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`.

2. 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.