

LISTSQL

This command is only available with Natural for DB2, Natural SQL Gateway, and Natural for SQL/DS. There are minor differences depending on whether the command is used with Natural for DB2, Natural SQL Gateway, or Natural for SQL/DS. These differences are marked accordingly in the following description.

<pre>LISTSQL [{ <i>object-name</i> } [ALL]] [<sa>]</pre>
--

This command generates a list of those Natural statements in the source code of a programming object which are associated with a database access. Also, it displays the corresponding SQL commands these Natural statements have been translated into. This enables you to view the generated SQL code before executing a Natural program which accesses an SQL table.

Syntax Element	Description
<i>object-name</i> <sa>	<p>If you specify a valid object name, the object to be displayed must be stored in the library to which you are currently logged on.</p> <p>If you do not specify an object name or if you specify <sa> (source area), LISTSQL refers to the object currently in the Natural source area.</p> <p>In any case, LISTSQL needs a cataloged or stowed object to perform its functionality.</p>
ALL	<p>If you specify the keyword ALL, the generated SQL statements of one object will be displayed in direct succession; that is, without scrolling. If you omit this keyword, the generated SQL statements contained in the specified object are listed one per page.</p> <p>You can use ALL in online mode and in batch mode. The output format will be the same. The functions Error (PF2), Explain (PF4) or Parms (PF6) are not available.</p> <p>When you specify ALL, you can use a question mark (?) or an asterisk (*) as wildcard character, for example: LISTSQL PGM* ALL. The special characters > and < are allowed, but only at the end of a string; this means, that, for example, ABC<DEF would be an invalid expression.</p>

Sample LISTSQL Screen:

```

14:50:23          ***** NATURAL TOOLS FOR SQL *****          2009-12-04
Member DEM2SEL          - LISTSQL -          Library SYSDB243
SQL Builder Version 4.10
Natural statement at line 0140          Stmt 1 / 1

  SELECT *
    INTO VIEW NAT-DEMO
    FROM NAT-DEMO

Generated SQL statement  Mode : dynamic  DBRM :          Line 1 / 3
          Length 68

  SELECT NAME, ADDRESS, DATEOFBIRTH, SALARY
  FROM NAT.DEMO
  FOR FETCH ONLY

Command ==>          Queryno for EXPLAIN 1_____

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
          Error Exit  Expl          ParmS          Prev Next Canc

```

If a static DBRM has been generated, the name of this DBRM is displayed in the **DBRM** field of the **LISTSQL** screen; otherwise, the **DBRM** field remains empty. A static DBRM is only available with Natural for DB2 and Natural for SQL/DS.

The following screen-specific PF key functions are available:

PF Key (Label):	Function:
PF2 (Error)	This key executes the <code>SQLERR</code> command. If an error occurs during <code>EXPLAIN</code> , you can use this key to get information on DB2 or SQL/DS errors, respectively.
PF4 (Expl)	With this key, you can execute an <code>EXPLAIN</code> command for the SQL statement currently listed. The query number for the <code>EXPLAIN</code> command (in the field Queryno for EXPLAIN) is set to 1 by default, but you can overwrite this default. EXPLAIN is only supported for Natural for DB2 and Natural for SQL/DS.
PF6 (Parms)	You can use this key to display a further screen which lists all parameters from the <code>SQLDA</code> for the currently displayed SQL statement; see sample screen below.
PF10 (Prev), PF11 (Next)	Within the listed results, you can go from one listed SQL statement to another by pressing the corresponding key.

Sample Parameters Screen:

```

14:55:24          ***** NATURAL TOOLS FOR SQL *****          2009-12-04
Member DEM2SEL          LISTSQL          Library SYSD243

      Mode : dynamic   DBRM :          Contoken :
                (3rd/pre)
      static parms : (1st)
                (2nd)

      SQLDA

      DBID : 250  FNR :   1  CMD : S1 0140 08
Nr  Type      Length   CCSID
1.  CHAR          20      8001 0000 0014 01C4 0000 0000 0800 0000
2.  CHAR         100      8002 0000 0064 01C4 0000 0000 0800 0000
3.  CHAR          10      8003 0000 000A 01C4 0000 0000 0800 0000
4.  DECIMAL       6.2      8004 4000 0602 01E5 0000 0000 0800 0000

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

```

In static mode, static information is also displayed, which includes the static DBRM name, the DB2 or SQL/DS consistency token, and some internal static parameters.

To navigate on the parameters screen, you can use the following PF keys, whose functions are assigned only if the information does not fit on the screen.

PF Key (Label):	Function:
PF6 (top,--), PF9 (bottom,++)	Using these keys, you can go directly to the top (--) or to the bottom (++) of the list.
PF8, PF7 (-)	Using these keys, you can scroll forwards (+) or backwards (-) by pressing the corresponding key.

Using the EXPLAIN Command with Natural for DB2

Important:

Before you use the DB2 EXPLAIN command, refer to the section *LISTSQL and Explain Functions* in the section *Special Requirements for Natural Tools for DB2* in the *Natural for DB2* documentation.

The EXPLAIN command provides information on the DB2 optimizer's choice of strategy for executing SQL statements. For the EXPLAIN command to be executed, a PLAN_TABLE must exist. The information determined by the DB2 optimizer is written to this table. The corresponding explanation is read from the PLAN_TABLE and displayed via the **EXPLAIN Result** screen.

Sample **Explain Result** Screen:

```

10:57:47          ***** NATURAL TOOLS FOR SQL *****          2009-12-03
Queryno 1          EXPLAIN Result          Row 1 / 1

          Estimated cost : 296.6 timerons

Qblock  Plan Mixop Acc. Match Index Pre-  Column- Access-
No      No  seq type cols only fetch fn_eval Creator.Name
-----
1       1    R          S

          Table-
          TabNo Creator.Name          Tslock      -- sortn --  -- sortc --
          mode  Method uq jo or gr  uq jo or gr
-----
1 NAT.DEMO          IS          N N N N  N N N N

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
          Exit  Info          More  -    +          Canc

```

If an explanation does not fit on one screen, you can scroll backwards and forwards by pressing PF7 (-) or PF8 (+), respectively.

The value in the **Estimated cost** field is taken from SQLERRD (4) in the SQLCA; it is a rough estimate of the required resources.

With PF4 (Info), the additional information that is provided with the EXPLAINB command is displayed.

Using the EXPLAIN Command with Natural SQL Gateway

This command is not applicable.

Using the EXPLAIN Command with Natural for SQL/DS

LISTSQL enables you to use the SQL/DS command EXPLAIN, which provides information on the SQL/DS optimizer's choice of strategy for executing SQL statements.

Natural executes the EXPLAIN command for the SQL statement that is displayed on the LISTSQL screen.

The information determined by the SQL/DS optimizer is written into your PLAN_TABLE. Natural then reads the table and displays the contents.

Sample **EXPLAIN Result** Screen:

10:22:07
Queryno 1

***** NATURAL TOOLS FOR SQL *****
EXPLAIN Result

2009-12-03
Row 1 / 1

Estimated cost : 3.3 timerons

Qblockno	Planno	Method	Tabno	Table creator	Tablename
1	1		1	NAT	DEMO

Access type	Access creator	Accessname	sort_new	sort_comp
R			N	N

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