

# Statement Logging

The Natural database log utility DBLOG allows you to ascertain which SQL statements are issued by a Natural program.

This section covers the following topic:

- Logging SQL Statements - DBLOG

## Logging SQL Statements - DBLOG

This section covers the following topics:

- Invoking DBLOG
- The DBLOG Menu for SQL/DS
- The Trace Function
- The Snapshot Function

### Invoking DBLOG

The Natural DBLOG utility is used to log SQL statements issued to SQL/DS.

You invoke DBLOG for SQL/DS by entering the command TEST DBLOG Q at the Natural NEXT prompt:

```

TEST DBLOG Q      [
                   ON
                   OFF
                   SHOW
                   CONT
                   MENU
                   ?
                   *
                  ]
  
```

Parameter	Explanation
Q	Starts logging of SQL statements.
ON	Starts the trace function for non-selective logging.
OFF	Terminates logging.
SHOW	Terminates logging and displays the current log.
CONT	Continues logging if a log already exists and displays the current log.
MENU / ? /*	Selective logging of SQL statements. The DBLOG menu is displayed for selection. Any existing log is deleted.

The statements are logged in the Natural debug buffer, which has to be specified via the DSIZE profile parameter, as described in the Natural Parameter Reference documentation.

If the Natural debug buffer is too small to contain all statements to be logged, only the most recent statements are held in the debug buffer.

If you enter the TEST DBLOG Q command without any parameters, logging of SQL statements is activated, or - if it has already been activated - the current log is displayed.

### The DBLOG Menu for SQL/DS

If you enter command TEST DBLOG Q with the parameter "MENU", "?" or "\*", the DBLOG Menu for SQL/DS is displayed, which offers the possibility of selective logging of SQL statements:

```

12:36:57          ***** NATURAL Test Utilities *****          1999-09-08
User SAG              - DBLOG Menu -                               Library SYSSQL

          Code  Function
          ----  -
          B    Begin Logging of SQL Statements
          E    End and Display Log Records
          S    Snapshot of Specific SQL Statement
          .    Exit
          ----  -
Code .. _

Statement .. _____ Skip ..... _____ Program .... _____
Line from .. 0000
Low SQLC  .. ____ High SQLC .. 999 Line to .... 0000

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

On the DBLOG Menu for SQL/DS, you can specify which SQL statements are to be logged. Each statement is logged after it has been processed by SQL/DS.

Code	Explanation
B	Corresponds to the command TEST DBLOG Q ON, which means that the trace function for selective logging is started and all SQL statements matching the selection criteria are logged.
E	Corresponds to the commands TEST DBLOG Q OFF/SHOW, which means that logging of SQL statements is stopped and the resulting log records are displayed.
S	Is used to log and display a specific SQL statement only.

The following selection criteria are available:

<b>Parameter</b>	<b>Explanation</b>
Statement	Only statements with the specified statement code are to be logged (for example SELECT).
Skip	Number of statements to be skipped before logging is to start (only applicable with function code "S").
Program	Only statements issued by the specified program are to be logged.
Line from /Line to	Only statements within the range of the specified line numbers are to be logged.
Low SQLC / High SQLC	Only statements which result in an SQL return code within the specified range are to be logged.

## The Trace Function

When you enter function code "B" and corresponding selection criteria on the DBLOG Menu, or enter the TEST DBLOG Q command without parameters or with parameter "ON", the trace function for SQL statements is invoked. The trace function is active until you enter the TEST DBLOG Q command again (or TEST DBLOG Q OFF respectively), or enter function code "E" on the DBLOG Menu.

Once you have entered function code "E" (or the command TEST DBLOG Q SHOW), the DBLOG Trace screen is displayed as shown in the following example.

### Example of Trace Function for SQL Statements:

1. Write the following program:

```

DEFINE DATA
LOCAL USING SQL-AUTO
LOCAL USING SQL-EMPL
END-DEFINE
FIND (1) SQL-AUTO WITH OWNER > 'ID----01'
  FIND (1) SQL-EMPL WITH PERS_ID = OWNER(0050)
    MOVE 'NAME333333333333347' TO NAME
    UPDATE
  END-FIND
  MOVE 'MAKE333333334' TO MAKE
  UPDATE
END-FIND
END TRANSACTION
FIND (1) SQL-AUTO WITH MAKE = 'MAKE333333334'
  FIND (1) SQL-EMPL WITH PERS_ID = OWNER(0140)
    DISPLAY PERS_ID NAME MAKE
  END-FIND
END-FIND
END

```

2. Enter "TEST DBLOG Q" at the Natural NEXT prompt.  
The message "DBLOG started now" is displayed.
3. Enter "RUN".
4. Enter "TEST DBLOG Q" again.

The following screen is displayed:

```

14:08:14          ***** NATURAL Test Utilities *****          1999-09-08
User SAG              - DBLOG Trace -              Library SYSSQL
M No   R  SQL Statement (truncated)   CU SN SREF M Typ  SQLC/W Program Line LV
-   -   -   -   -   -   -   -   -   -   -   -   -   -   -   -   -   -   -
-   1   SELECT MAKE,MODEL,BODY_TYPE,H 01 01 0050 D ASQ      DBTEST   0050 01
-   2   FETCH CURSOR                   01 01 0050 D ASQ      DBTEST   0050 01
-   3   SELECT PERS_ID,NAME FROM SAG. 02 02 0060 D ASQ      DBTEST   0060 01
-   4   FETCH CURSOR                   02 02 0060 D ASQ      DBTEST   0060 01
-   5   UPDATE SAG.EMPLOYEEES SET NAME 02 03 0060 D ASQ      DBTEST   0080 01
-   6   CLOSE CURSOR                   02 02 0060 D ASQ      DBTEST   0060 01
-   7   UPDATE SAG.AUTOMOBILES SET MA 01 04 0050 D ASQ      DBTEST   0120 01
-   8   CLOSE CURSOR                   01 01 0050 D ASQ      DBTEST   0050 01
-   9   COMMIT                          00 00 0000 D ASQ      DBTEST   0140 01
-  10   SELECT MAKE,MODEL,BODY_TYPE,H 01 01 0150 D ASQ      DBTEST   0150 01
-  11   FETCH CURSOR                   01 01 0150 D ASQ      DBTEST   0150 01
-  12   SELECT PERS_ID,NAME FROM SAG. 02 02 0160 D ASQ      DBTEST   0160 01
-  13   FETCH CURSOR                   02 02 0160 D ASQ      DBTEST   0160 01
-  14   CLOSE CURSOR                   02 02 0160 D ASQ      DBTEST   0160 01
-  15   CLOSE CURSOR                   01 01 0150 D ASQ      DBTEST   0150 01
-
-
Command ==>>
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
      Help Print Exit Top  Posi Bot   -   +                               Canc

```

On the DBLOG Trace screen for SQL/DS, the following information is displayed:

Item	Explanation
M	Applicable with OS/390 operating systems only.
No	Sequence number; the statements are displayed in the sequence in which they were executed.
R	Applicable with OS/390 operating systems only.
SQL Statement	The first 29 characters of the logged SQL statement.
CU	Cursor number.
SN	Internal statement number.
SREF	Statement reference number.
M	Mode ("D" for dynamic or "S" for static).
Typ	Statement type (in this case: "/DS" for SQL/DS).
SQLC/W	Either the SQL return code in the SQLCODE field of the SQLCA, or the warning in the SQLWARN0 field of the SQLCA if SQLCODE is 0.
Pgm	Natural program name.
Line	Source-code line number.
LV	Program level.

## The Snapshot Function

When you enter function code "S" and the appropriate selection criteria on the DBLOG Menu for SQL/DS, a "snapshot" of the specified statement is made as soon as it occurs.

A snapshot does not interrupt the program flow. The snapped data are displayed only if logging is terminated by the user.

Unlike the statements displayed with the Trace function, the snapshot statement is shown in its entirety (limited to 13 lines).

Once you have entered function code "E" on the DBLOG menu (or the command TEST DBLOG Q SHOW in the Natural NEXT line), the Snapshot Report screen is displayed as shown in the following example:

**Example of Snapshot Report for SQL Statements:**

```

14:09:00          ***** NATURAL Test Utilities *****          1999-09-08
User SAG              - Snapshot Report -              Library SYSSQL

CU SN M Typ R SQLC/W      Library  Program  Store Clock Value  Line LV CID(Hex)
01 01 D ASQ              SYSSAG  DBTEST   1993/02/08 09:03:33 0050 01 00500101

SQL Statement
SELECT MAKE,MODEL,BODY_TYPE,HORSEPOWER,COLOR,SERIAL_NO,OWNER FROM SAG.AUTOMOBIL
ES WHERE OWNER > 'ID----01' FOR UPDATE OF MAKE

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

```

On the DBLOG Snapshot Report screen for SQL/DS, the following information is displayed:

<b>Item</b>	<b>Explanation</b>
CU	Cursor number.
SN	Internal statement number.
M	Mode ("D" for dynamic or "S" for static).
Typ	Database type (in this case: "/DS" for SQL/DS).
R	Applicable with OS/390 operating systems only.
SQLC/W	Either the SQL return code in the SQLCODE field of the SQLCA, or the warning in the SQLWARN0 field of theSQLCA if SQLCODE is 0.
Library	The library where the Natural program with the logged statement was cataloged.
Program	The name of the Natural program which contains the logged statement.
Store Clock Value	The time stamp of the Natural program which contains the logged statement.
Line	The source-code line number of the logged statement.
LV	The call level of the Natural program which contains the logged statement.
CID (hex)	The command ID of the logged statement (in hexadecimal format).