SELECT - SQL

This chapter covers the following topics:

- Function
- Syntax 1 - Cursor-Oriented Selection
- Syntax 2 - Non-Cursor Selection
- Join Queries

Belongs to Function Group: *Database Access and Update*

Function

The `SELECT` statement supports both the cursor-oriented selection that is used to retrieve an arbitrary number of rows and the non-cursor selection (singleton `SELECT`) that retrieves at most one single row. With the `SELECT ... END-SELECT` construction, Natural uses the same database loop processing as with the `FIND` statement.

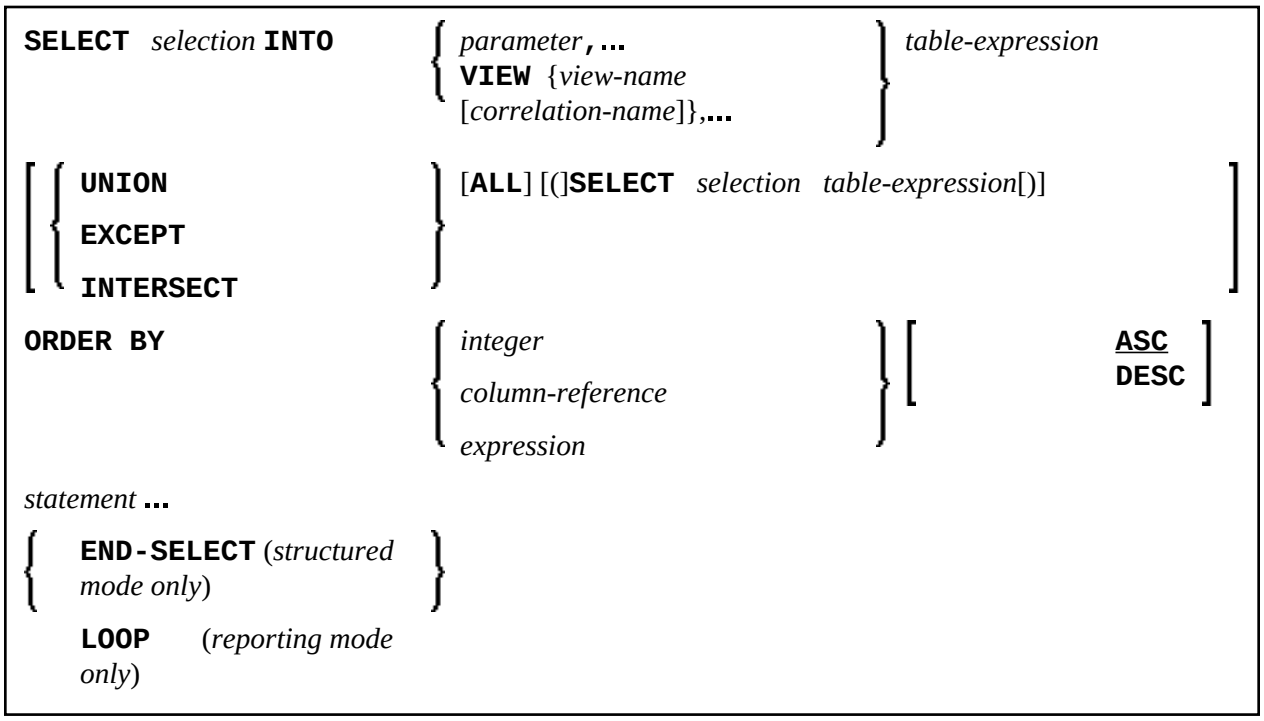
Two different structures are possible.

Syntax 1 - Cursor-Oriented Selection

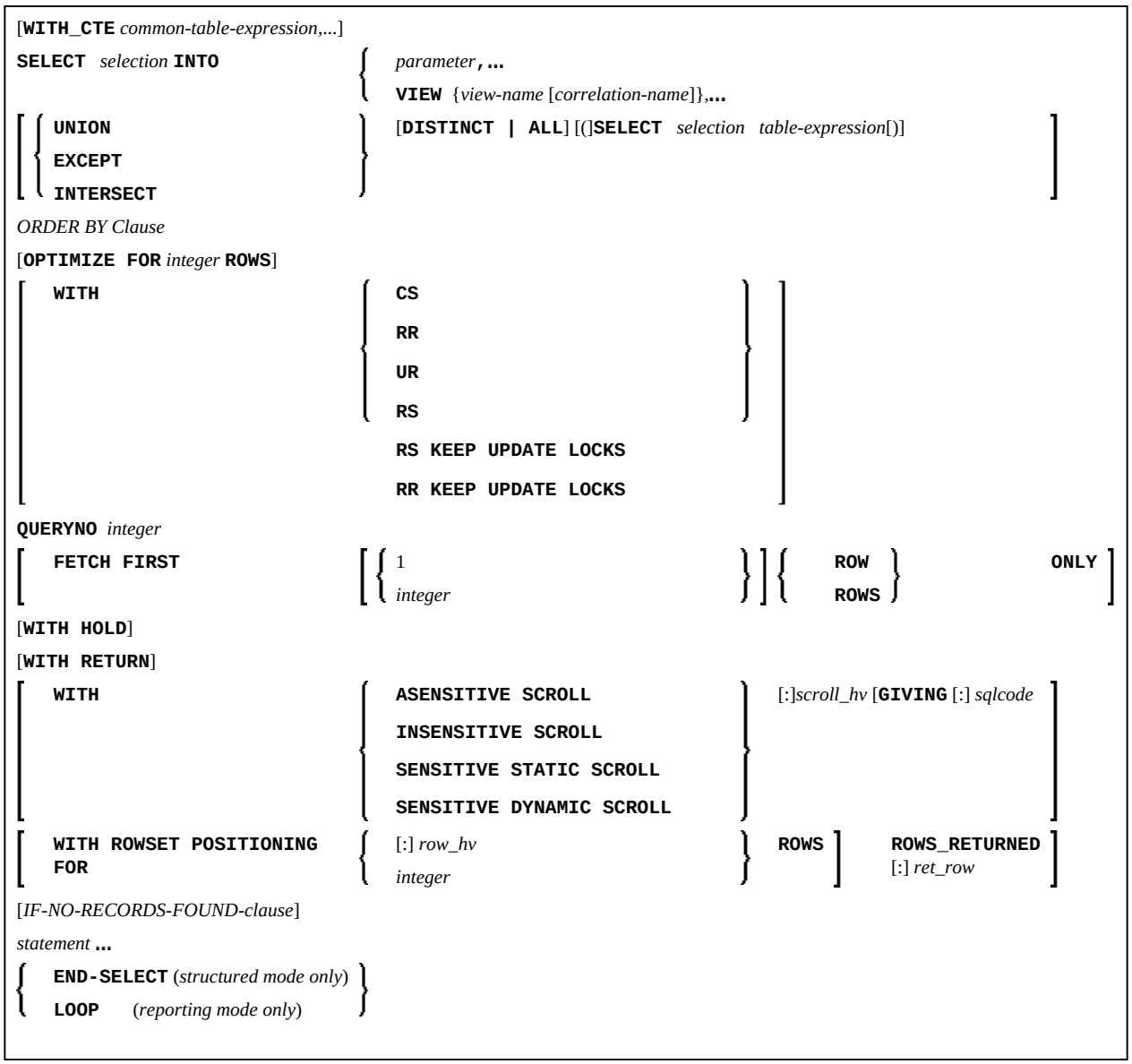
Like the Natural `FIND` statement, the cursor-oriented `SELECT` statement is used to select a set of rows (records) from one or more DB2 tables, based on a search criterion. Since a database loop is initiated, the loop must be closed by a `LOOP` (reporting mode) or `END-SELECT` statement. With this construction, Natural uses the same loop processing as with the `FIND` statement.

In addition, no cursor management is required from the application program; it is automatically handled by Natural.

Common Set Syntax:



Extended Set Syntax:



For an explanation of the symbols used in the syntax diagram, see *Syntax Symbols*.

Syntax Element Description - Syntax 1:

Similar to the `FIND` statement, a cursor-oriented selection is used to select a set of rows (records) from one or more database tables, based on a search criterion. In addition, no cursor management is required from the application program; it is automatically handled by Natural.

Syntax Element	Description
INTO	**INTO Clause:** The INTO clause is used to specify the target fields in the program which are to be filled with the result of the selection. For further information and examples, see *INTO Clause* below.
VIEW	**VIEW Clause:** If one or more views are referenced in the INTO clause, the number of items specified in the *selection* must correspond to the number of fields defined in the view(s) (not counting group fields, redefining fields and indicator fields). For further information and examples, see *VIEW Clause* below.
table-expression	**Table Expression:** A *table-expression* consists of a FROM clause and an optional WHERE clause. For further information and examples, see *table-expression* below.
UNION	**Query Involving UNION Clause:** UNION unites the results of two or more select expressions. For further information and an example, see *Query Involving UNION* below.
ALL	**Including Redundant Rows:** Specifies the result set contains redundant (duplicate) rows.
ORDER BY	**ORDER BY Clause:** The ORDER BY clause arranges the result of a SELECT statement in a particular sequence. For further information and examples; see *ORDER BY Clause* below.
IF NO RECORDS FOUND	**IF NO RECORDS FOUND Clause:** The IF NO RECORDS FOUND clause is used to initiate a processing loop if no records meet the selection criteria specified in the preceding SELECT statement. For further information, see *IF NO RECORDS FOUND Clause* below.
END-SELECT	The Natural reserved keyword END-SELECT must be used to end the SELECT statement.

The following syntax elements belong to the SQL Extended Set:

Syntax Element	Description
WITH_CTE *common-table-expression*,...	**WITH_CTE Clause:** This optional clause allows you to define a result table which can be referenced in any FROM clause of the SELECT that follows. Multiple common-table-expressions can be specified following the single WITH_CTE keyword. Each *common-table-expression* can also be referenced in the FROM clause of a subsequent *common-table-expression*. For further information, see *WITH CTE common-table-expression,...* below.

Syntax Element	Description	
`OPTIMIZE FOR`	**OPTIMIZE FOR Clause:** This clause is only valid against DB2 databases. When used against other databases, it will cause runtime errors.	
`WITH CS/RS/UR/...`	**WITH CS/RS/UR/... Clause:** This clause is only valid against DB2 databases. When used against other databases, it will cause runtime errors.	
	`CS`	Cursor Stability
	`RR`	Repeatable Read
	`RS`	Read Stability
`QUERYNO`	**QUERYNO Clause:** The `QUERYNO` clause specifies the number to be used for this SQL statement in `EXPLAIN` output and trace records.	
`FETCH FIRST`	**FETCH FIRST Clause:** This clause is only valid against DB2 databases. When used against other databases, it will cause runtime errors.	
`WITH HOLD`	**WITH HOLD Clause:** This clause is not currently supported. When used, it will cause a compiler error.	
`WITH RETURN`	**WITH RETURN Clause:** This clause is not currently supported. When used, it will cause a compiler error.	

Syntax Element	Description
`WITH ... SCROLL`	**WITH ... SCROLL Clause:** RDBMS scrollable cursors are enabled with this clause. Scrollable cursors can be `ASENSITIVE`, `INSENSITIVE`, `SENSITIVE STATIC` or `SENSITIVE DYNAMIC`. **Note:** Not all SQL database systems support all options. • `WITH ASENSITIVE SCROLL` specifies that the cursor is either `INSENSITIVE` or `SENSITIVE DYNAMIC`. This is determined by the database at open time of the cursor, depending on the read-only property of the cursor: If the cursor is read-only, the cursor will become `INSENSITIVE`. If the cursor is not read-only, the cursor will become `SENSITIVE DYNAMIC`. This is supported for DB2 databases. • `WITH INSENSITIVE SCROLL` specifies that the cursor is insensitive for updates, deletes and inserts executed against the base table, after the cursor has been updated. Positioned updates and deletes are not allowed against `INSENSITIVE SCROLL` cursors. This is supported for Oracle, Adabas D, Informix, MS SQL Server ODBC and DB2 databases. • `WITH SENSITIVE STATIC` specifies that the cursor is sensitive for updates and deletes against the base table, but not against inserts, after the cursor has been opened. Positioned updates and deletes are allowed against `SENSITIVE STATIC SCROLL` cursors. This is supported for Adabas D, MS SQL Server ODBC and DB2 databases. • `WITH SENSITIVE DYNAMIC` specifies that the cursor is sensitive for updates, deletes and inserts against the base table, after the cursor has been opened. Positioned updates and deletes are allowed against `SENSITIVE DYNAMIC SCROLL` cursors. This is supported for Adabas D, MS SQL Server ODBC and DB2 databases. Scrollable cursors allow the application to position any row in the cursor at any time as long as the cursor is open. Scrollable cursors are not supported for Sybase databases at all. Scrollable cursors are not supported for the MS SQL Server DBLIB interface, but only for the MS SQL Server ODBC interface. The positioning is performed depending on the content of the *scroll_hv*. The content is evaluated each time a `FETCH` against the database is executed.

Syntax Element	Description
`WITH ROWSET POSITIONING FOR … ROWS`	**WITH ROWSET POSITIONING FOR … ROWS Clause:** This clause enables DB2 rowset processing, which corresponds to Natural native DML multifetch processing. `[:] row_hv (I4)` or *`integer`* determines the maximal number of rows returned from DB2 to Natural. The number determines either the size of the Natural multifetch buffer used for standard multiple row processing or the maximal number of rows returned from DB2 into the Natural program for advanced multiple row processing.
`ROWS_RETURNED [:] ret_row`	**ROWS_RETURNED [:] *ret_row* Clause:** This clause specifies an I4 variable which will receive the number of rows returned by DB2 on behalf of the last executed DB2 fetch operation for advanced multiple row processing.

WITH_CTE *common-table-expression,…*

This clause permits to define result tables that can be referenced in any `FROM` clause of the `SELECT` statement that follows.

The Natural specific keyword `WITH_CTE` corresponds to the SQL keyword `WITH`. `WITH_CTE` will be translated into the SQL keyword `WITH` by the Natural compiler.

Each common-table-expression has to obey the following syntax:

```
[common-table-expression-name [(column-name,…)]AS (fullselect)]
```

Syntax Element Description:

Syntax Element	Description
`common-table-expression-name`	Has to be an unqualified SQL identifier and must be different from any other common-table-expression-name specified in the same statement. Each *`common-table-expression-name`* can be specified in the `FROM` clause of any *`common-table-expression-name`* following or in the `FROM` clause of the `SELECT` statement following.
`column-name`	Has to be an unqualified SQL identifier and must be unique within one *`common-table-expression-name`*.
`AS (`*`fullselect`*`)`	The number of *`column-names`* must match the number of columns of the *`fullselect`*.

A common-table-expression can be used

- in place of a view to avoid creating the view;
- when the same result table needs to be shared in a *fullselect* ;
- when the result needs to be derived using recursion.

Queries using recursion are useful in applications such as bill of material.

Example:

```
WITH_CTE
 RPL (PART,SUBPART,QUANTITY) AS
 (SELECT ROOT.PART,ROOT.SUBPART,ROOT.QUANTITY
    FROM HGK-PARTLIST ROOT
   WHERE ROOT.PART ='01'
  UNION ALL
  SELECT CHILD.PART,CHILD.SUBPART,CHILD.QUANTITY
    FROM  RPL PARENT, HGK-PARTLIST CHILD
    WHERE PARENT.SUBPART = CHILD.PART
  )
SELECT DISTINCT PART,SUBPART,QUANTITY
  INTO VIEW V1
  FROM RPL
  ORDER BY PART,SUBPART,QUANTITY
END-SELECT
```

OPTIMIZE FOR *integer* ROWS

[**OPTIMIZE FOR** *integer* **ROWS**]

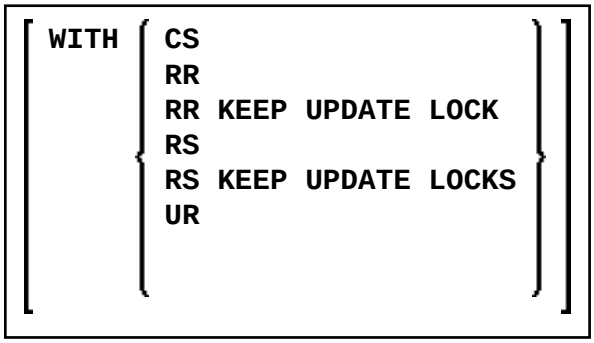
The OPTIMIZE FOR *integer* ROWS clause is used to inform DB2 in advance of the number (*integer*) of rows to be retrieved from the result table. Without this clause, DB2 assumes that all rows of the result table are to be retrieved and optimizes accordingly.

This optional clause is useful if you know how many rows are likely to be selected, because optimizing for *integer* rows can improve performance if the number of rows actually selected does not exceed the *integer* value (which can be in the range from 0 to 2147483647).

Example:

```
SELECT name INTO
#name FROM table WHERE AGE = 2 OPTIMIZE FOR 100 ROWS
```

WITH - Isolation Level



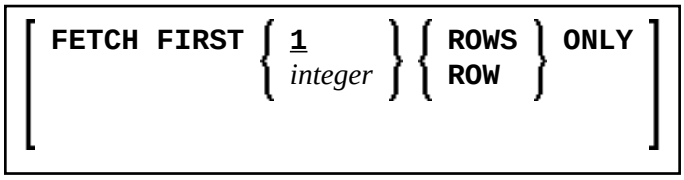
This WITH clause allows you to specify an explicit isolation level with which the statement is to be executed. The following options are provided:

Option	Meaning
CS	Cursor Stability
RR	Repeatable Read
RS	Read Stability
RS KEEP UPDATE LOCKS	Only valid if a FOR UPDATE OF clause is specified. Read Stability and retaining update locks.
RR KEEP UPDATE LOCKS	Only valid if a FOR UPDATE OF clause is specified. Repeatable Read and retaining update locks.
UR	Uncommitted Read

WITH UR can only be specified within a SELECT statement and when the table is read-only. The default isolation level is determined by the isolation of the package or plan into which the statement is bound. The default isolation level also depends on whether the result table is read-only or not. To find out the default isolation level, refer to the IBM literature.

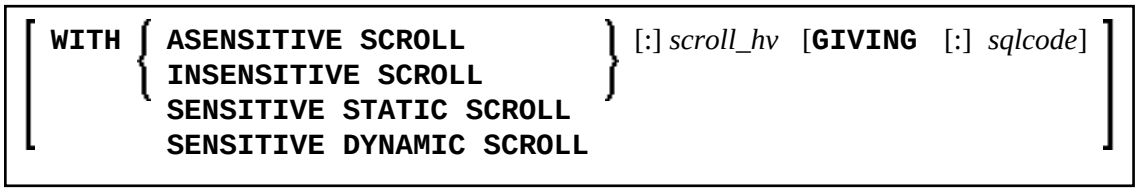
Note:
This option also works for non-cursor selection.

FETCH FIRST



The FETCH FIRST clause limits the number of rows to be fetched. It improves the performance of queries with potentially large result sets if only a limited number of rows is needed.

WITH INSENSITIVE/SENSITIVE



Natural supports SQL scrollable cursors by using the clauses WITH ASENSITIVE SCROLL, WITH SENSITIVE STATIC SCROLL and SENSITVE DYNAMIC SCROLL. Scrollable cursors allow Natural applications to position randomly any row in a result set. With non-scrollable cursors, the data can only be read sequentially, from top to bottom.

ASENSITIVE scrollable cursors are either INSENSITIVE - if the cursor is READ-ONLY - or SENSITIVE DYNAMIC - if the cursor is not READ-ONLY.

INSENSITIVE and SENSITIVE STATIC scrollable cursors use temporary result tables and require a TEMP database in DB2 (see the relevant DB2 literature by IBM).

INSENSITIVE SCROLL refers to a cursor that cannot be used in Positioned UPDATE or Positioned DELETE operations. In addition, once opened, an INSENSITIVE SCROLL cursor does not reflect UPDATE, DELETE or INSERT operations against the base table, after the cursor was opened.

SENSITIVE STATIC SCROLL refers to a cursor that can be used for Positioned UPDATEs or Positioned DELETE operations. In addition, a SENSITIVE STATIC SCROLL cursor reflects UPDATEs, DELETEs of base table rows. The cursor does not reflect INSERT operations.

SENSITIVE DYNAMIC scrollable cursors reflect UPDATEs, DELETEs and INSERTs against the base table while the cursor is open.

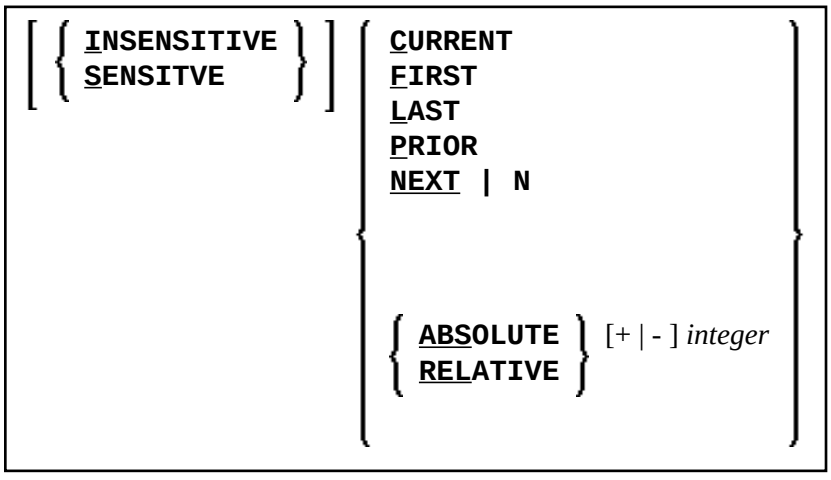
Below is information on:

- scroll_hv
- scroll_hv - Options
- GIVING [:] sqlcode

scroll_hv

The variable *scroll_hv* must be alphanumeric.

The variable *scroll_hv* specifies which row of the result table will be fetched during one execution of the database processing loop. The contents of *scroll_hv* is evaluated each time the database processing loop cycle is executed.



scroll_hv - Options

Option	Explanation
CURRENT	Fetches the current row (again).
FIRST	Fetches the first row.
LAST	Fetches the last row.
NEXT	Fetches the row after the current one. This is the default value.
+/- integer	Only applies in connection with ABSOLUTE or RELATIVE. Specifies the position of the row to be fetched ABSOLUTE or RELATIVE. Enter a plus (+) or minus (-) sign followed by an integer. The default value is a plus (+).
ABSOLUTE	Only applies in connection with *+/- integer*. Uses *integer* as the absolute position within the result set from where the row is fetched.
RELATIVE	Only applies in connection with *+/- integer*. Uses *integer* as the relative position to the current position within the result set from where the row is fetched.

There are some restrictions for special RDBMS systems:

- DB2 does not support the keyword CURRENT.
- In a SELECT FOR UPDATE loop DB2 only supports NEXT as scrolling option.
- MS SQL Server (ODBC interface) does not support the keyword CURRENT.
- Adabas D does not support RELATIVE scrolling.

GIVING [:] *sqlcode*

The specification of GIVING [:] *sqlcode* is optional. If specified, the Natural variable [:] *sqlcode* must be of the Format I4. The values for this variable are returned from the DB2 SQLCODE of the underlying FETCH operation. This allows the application to react to different statuses encountered while the scrollable cursor is open. The most important status codes indicated by SQLCODE are listed in the following table:

SQLCODE	Explanation
0	FETCH operation successful, data returned except for FETCH with option BEFORE or AFTER.
+100	Row not found, cursor still open, no data returned.
-1	General error while trying to FETCH a row

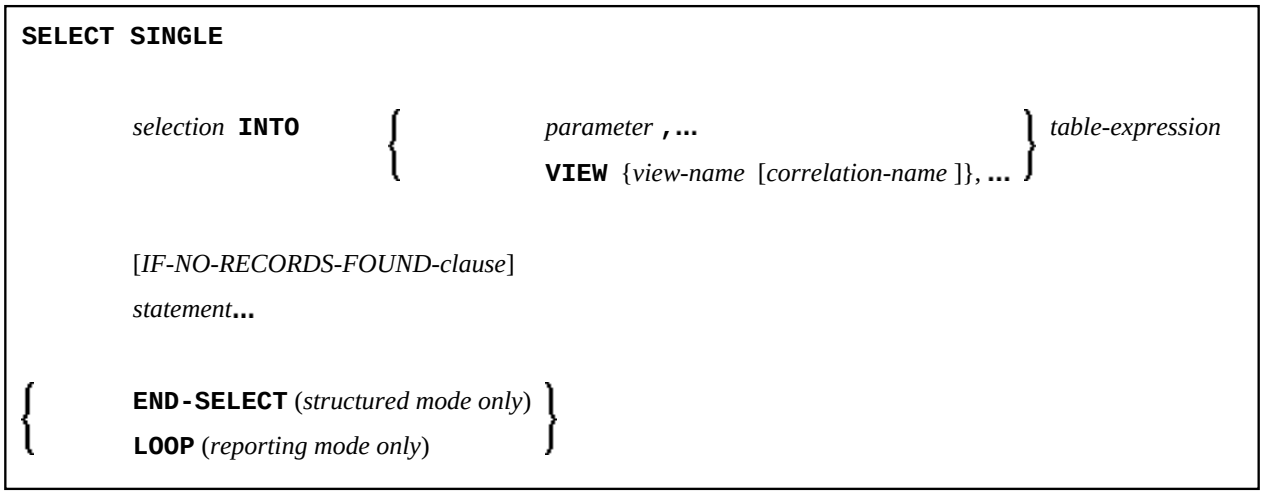
If you specify GIVING [:] *sqlcode*, the application must react to the different statuses. If an SQLCODE +100 is entered five times successively and without terminal I/O, the Natural for DB2 runtime will issue Natural error NAT3296 in order to avoid application looping. The application can terminate the processing loop by executing an ESCAPE statement.

If you do not specify GIVING [:] *sqlcode*, except for SQLCODE 0 and SQLCODE +100, each SQLCODE will generate Natural error NAT3700 and the processing loop will be terminated. SQLCODE +100 (row not found) will terminate the processing loop.

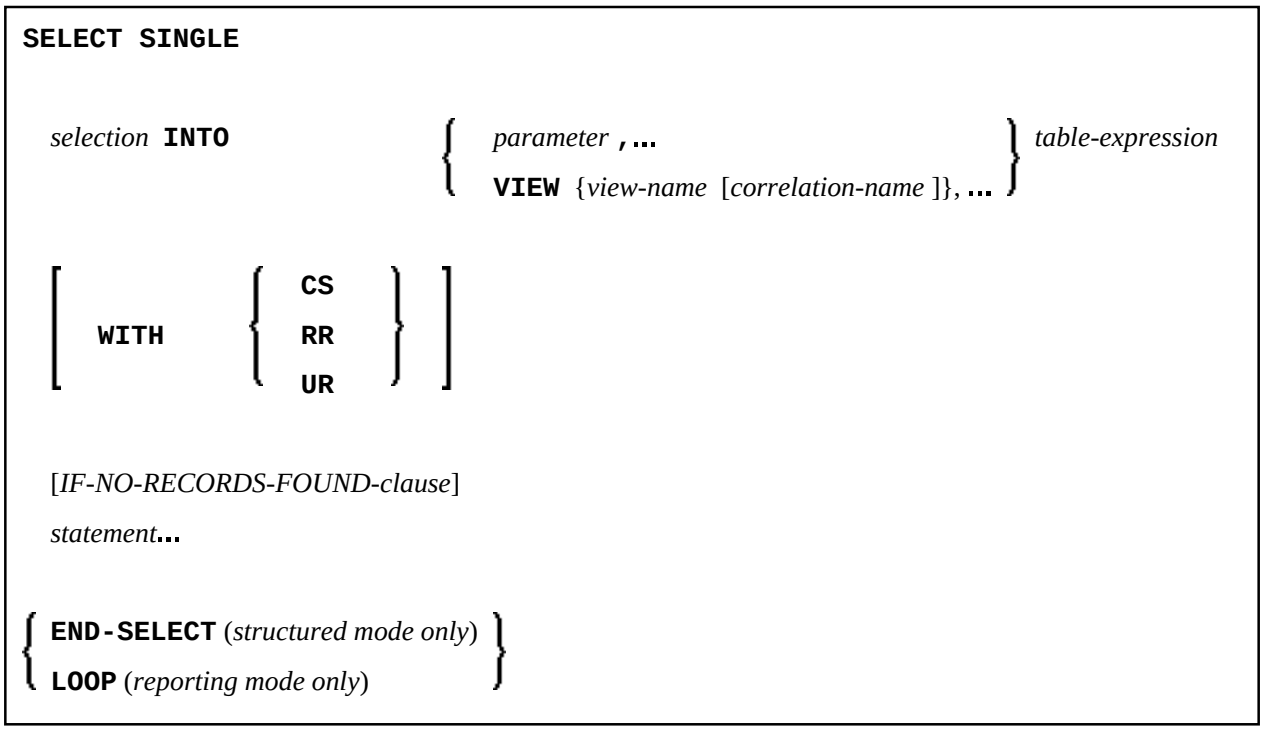
See also the example program DEM2SCRL supplied in the Natural system library SYSDB2.

Syntax 2 - Non-Cursor Selection

Common Set Syntax:



Extended Set Syntax:



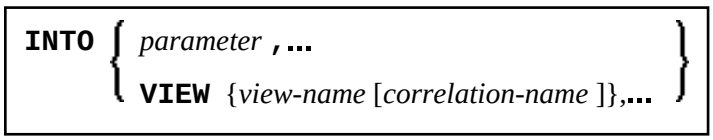
For an explanation of the symbols used in the syntax diagram, see *Syntax Symbols*.

Syntax Element Description - Syntax 2:

The `SELECT SINGLE` statement supports the functionality of a non-cursor selection (singleton `SELECT`); that is, a select expression that retrieves at most one row without using a cursor. It cannot be referenced by a positioned `UPDATE` or a positioned `DELETE` statement.

Syntax Element	Description
INTO	**INTO Clause:** The INTO clause is used to specify the target fields in the program which are to be filled with the result of the selection. For further information and examples, see *INTO Clause* below.
VIEW	**VIEW Clause:** If one or more views are referenced in the INTO clause, the number of items specified in the *selection* must correspond to the number of fields defined in the view(s) (not counting group fields, redefining fields and indicator fields). For further information and examples, see *VIEW Clause* below.
table-expression	**Table Expression:** The *table-expression* consists of a FROM clause and optionally of a WHERE clause, a GROUP BY clause and a HAVING clause. For further information, see *selection* and *table-expression*. See also see *Examples of table-expression* below.
WITH CS/RR/UR	**WITH CS/RR/UR Clause:** This clause is only valid against DB2 databases. When used against other databases, it will cause runtime errors.
	CS — Cursor Stability
	RR — Repeatable Read
	RS — Read Stability
IF NO RECORDS FOUND	**IF NO RECORDS FOUND Clause:** This clause is used to initiate a processing loop if no records meet the selection criteria specified in the preceding SELECT statement. For further information, see *IF NO RECORDS FOUND Clause* below.
END-SELECT	**End of SELECT Statement:** The Natural reserved keyword END-SELECT must be used to end the SELECT statement.

INTO Clause



The INTO clause is used to specify the target fields in the program which are to be filled with the result of the selection. The INTO clause can specify either single *parameters* or one or more views as defined in the DEFINE DATA statement.

All target field values can come either from a single table or from more than one table as a result of a join operation (see also the section *Join Queries*).

Note:
In standard SQL syntax, an INTO clause is only used in non-cursor select operations (singleton SELECT) and can be specified only if a single row is to be selected. In Natural, however, the INTO clause is used for both cursor-oriented and non-cursor select operations.

The *selection* can also merely consist of an asterisk (*). In a standard select expression, this is a shorthand for a list of all column names in the table(s) specified in the FROM clause. In the Natural SELECT statement, however, the same syntactical item SELECT * has a different semantic meaning: all the items listed in the INTO clause are also used in the selection. Their names must correspond to names of existing database columns.

Examples:

Example 1:

```
DEFINE DATA LOCAL
01 PERS VIEW OF SQL-PERSONNEL
  02 NAME
  02 AGE
END-DEFINE
...
SELECT *
  INTO NAME, AGE
```

Example 2:

```
...
SELECT *
  INTO VIEW PERS
```

These examples are equivalent to the following ones:

Example 3:

```
...
SELECT NAME, AGE
  INTO NAME, AGE
```

Example 4:

```
...
SELECT NAME, AGE
  INTO VIEW PERS
```

VIEW Clause

VIEW {*view-name* [*correlation-name*]}, **...**

If one or more views are referenced in the INTO clause, the number of items specified in the *selection* must correspond to the number of fields defined in the view(s) (not counting group fields, redefining fields and indicator fields).

Note:
Both the Natural target fields and the table columns must be defined in a Natural DDM. Their names, however, can be different, since assignment is made according to their sequence.

Example of INTO Clause with View:

```
DEFINE DATA LOCAL
01 PERS VIEW OF SQL-PERSONNEL
  02 NAME
  02 AGE
END-DEFINE
...
SELECT FIRSTNAME, AGE
  INTO VIEW PERS
  FROM SQL-PERSONNEL
...
```

The target fields NAME and AGE, which are part of a Natural view, receive the contents of the table columns FIRSTNAME and AGE.

Syntax Element Description:

Syntax Element	Description

parameter	If single parameters are specified as target fields, their number and formats must correspond to the number and formats of the *columns* and/or *scalar-expressions* specified in the corresponding selection as described above (for details, see *Scalar Expressions*).
	
	Example:
	
	`DEFINE DATA LOCAL`
	`01 #NAME (A20)`
	`01 #AGE (I2)`
	`END-DEFINE`
	`...`
	`SELECT NAME, AGE`
	`INTO #NAME, #AGE`
	`FROM SQL-PERSONNEL`
	`...`
	
	The target fields #NAME and #AGE, which are Natural program variables, receive the contents of the table columns NAME and AGE.

correlation-name	If the VIEW clause is used within a SELECT * construction where multiple tables are to be joined, *correlation-names* are required if the specified view contains fields that reference columns which exist in more than one of these tables. In order to know which column to select, all these columns are qualified by the specified *correlation-name* at generation of the selection list. The *correlation-name* assigned to a view must correspond to one of the *correlation-names* used to qualify the tables to be joined. See also the section *Join Queries*.
	
	Example:
	
	`DEFINE DATA LOCAL`
	`01 PERS VIEW OF SQL-PERSONNEL`
	`02 NAME`
	`02 FIRST-NAME`
	`02 AGE`
	`END-DEFINE`
	`...`
	`SELECT *`
	`INTO VIEW PERS A`
	`FROM SQL-PERSONNEL A, SQL-PERSONNEL B`
	`...`

Examples of *table-expression*

Example 1:

```
DEFINE DATA LOCAL
01 #NAME      (A20)
01 #FIRSTNAME (A15)
01 #AGE       (I2)
...
END-DEFINE
...
SELECT NAME, FIRSTNAME, AGE
  INTO #NAME, #FIRSTNAME, #AGE
```

```
  FROM SQL-PERSONNEL
    WHERE NAME IS NOT NULL
      AND AGE > 20
...
  DISPLAY #NAME #FIRSTNAME #AGE
END-SELECT
...
END
```

Example 2:

```
DEFINE DATA LOCAL
01 #COUNT    (I4)
...
END-DEFINE
...
SELECT SINGLE COUNT(*) INTO #COUNT FROM SQL-PERSONNEL
...
```

Query Involving UNION

Note:
In the following, the term "SELECT statement" is used as a synonym for the whole query-expression consisting of multiple select expressions concatenated with a Set operation (`UNION`, `EXCEPT`, `INTERSECT`).

`UNION` unites the results of two or more select-expressions. The columns specified in the individual select-expressions must be UNION-compatible; that is, matching in number, type and format.

Redundant duplicate rows are always eliminated from the result of a Set operation unless the Set operation explicitly includes the `ALL` qualifier.

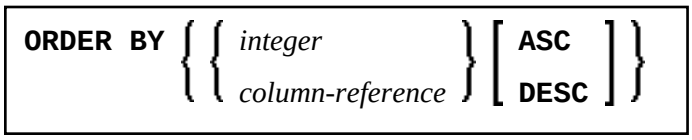
Example:

```
DEFINE DATA LOCAL
01 PERS VIEW OF SQL-PERSONNEL
  02 NAME
  02 AGE
  02 ADDRESS (1:6)
END-DEFINE
...
SELECT NAME, AGE, ADDRESS
  INTO VIEW PERS
  FROM SQL-PERSONNEL
  WHERE AGE > 55
UNION ALL
SELECT NAME, AGE, ADDRESS
  FROM SQL-EMPLOYEES
  WHERE PERSNR < 100
ORDER BY NAME
...
END-SELECT
...
```

In general, any number of *`select-expressions`* can be concatenated with `UNION`.

The INTO clause must be specified with the first *select-expression* only.

ORDER BY Clause



The ORDER BY clause arranges the result of a SELECT statement in a particular sequence.

Each ORDER BY clause must specify a column of the result table. In most ORDER BY clauses a column can be identified either by column-reference (that is, by an optionally qualified column name) or by column number. In a query involving UNION, a column must be identified by column number. The column number is the ordinal left-to-right position of a column within the selection, which means it is an integer value. This feature makes it possible to order a result on the basis of a computed column which does not have a name.

Example:

```
DEFINE DATA LOCAL
1 #NAME          (A20)
1 #YEARS-TO-WORK (I2)
END-DEFINE
...
SELECT NAME , 65 - AGE
  INTO #NAME, #YEARS-TO-WORK
  FROM SQL-PERSONNEL
  ORDER BY 2
  ...
```

The order specified in the ORDER BY clause can be either ascending (ASC) or descending (DESC). ASC is the default.

Example:

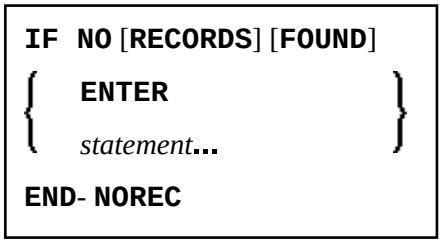
```
DEFINE DATA LOCAL
1 PERS VIEW OF SQL-PERSONNEL
1 NAME
1 AGE
1 ADDRESS   (1:6)
END-DEFINE
...
SELECT NAME, AGE, ADDRESS
  INTO VIEW PERS
  FROM SQL-PERSONNEL
  WHERE AGE = 55
  ORDER BY NAME DESC
  ...
```

See further information on *integer* values and *column-reference*.

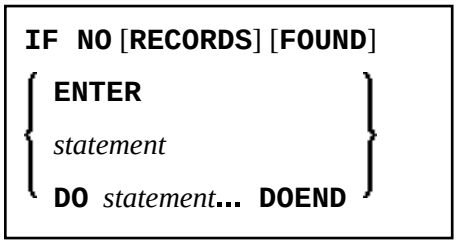
IF NO RECORDS FOUND-Clause

Note:
This clause actually does not belong to Natural SQL; it represents Natural functionality which has been made available to SQL loop processing.

Structured Mode Syntax



Reporting Mode Syntax



The `IF NO RECORDS FOUND` clause is used to initiate a processing loop if no records meet the selection criteria specified in the preceding `SELECT` statement.

If no records meet the specified selection criteria, the `IF NO RECORDS FOUND` clause causes the processing loop to be executed once with an "empty" record. If this is not desired, specify the statement `ESCAPE BOTTOM` within the `IF NO RECORDS FOUND` clause.

If one or more statements are specified with the `IF NO RECORDS FOUND` clause, the statements are executed immediately before the processing loop is entered. If no statements are to be executed before entering the loop, the keyword `ENTER` must be used.

Note:
If the result set of the `SELECT` statement consists of a single row of `NULL` values, the `IF NO RECORDS FOUND` clause is not executed. This could occur if the selection list consists solely of one of the aggregate functions `SUM`, `AVG`, `MIN` or `MAX` on columns, and the set on which these aggregate functions operate is empty. When you use these aggregate functions in the above-mentioned way, you should therefore check the values of the corresponding null-indicator fields instead of using an `IF NO RECORDS FOUND` clause.

Database Values

Unless other value assignments are made in the statements accompanying an `IF NO RECORDS FOUND` clause, Natural resets to empty all database fields which reference the file specified in the current loop.

Evaluation of System Functions

Natural system functions are evaluated once for the empty record that is created for processing as a result of the `IF NO RECORDS FOUND` clause.

Join Queries

A join is a query in which data is retrieved from more than one table. All the tables involved must be specified in the `FROM` clause.

Example:

```
DEFINE DATA LOCAL
1 #NAME     (A20)
1 #MONEY    (I4)
END-DEFINE
...
SELECT NAME, ACCOUNT
  INTO #NAME, #MONEY
  FROM  SQL-PERSONNEL P, SQL-FINANCE F
  WHERE P.PERSNR = F.PERSNR
    AND F.ACCOUNT > 10000
    ...
```

A join always forms the Cartesian product of the tables listed in the `FROM` clause and later eliminates from this Cartesian product table all the rows that do not satisfy the join condition specified in the `WHERE` clause.

Correlation names can be used to save writing if table names are rather long. Correlation names must be used when a column specified in the selection list exists in more than one of the tables to be joined in order to know which of the identically named columns to select.