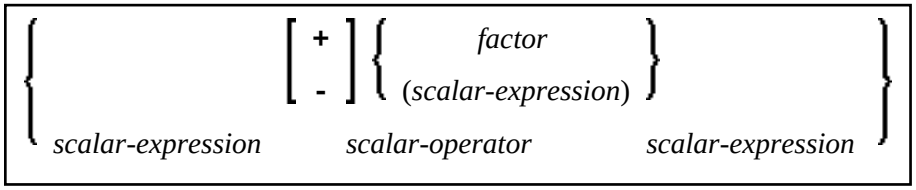
Scalar Expressions



This chapter covers the following topics:

- Scalar Expression
- Scalar Operator
- Factor

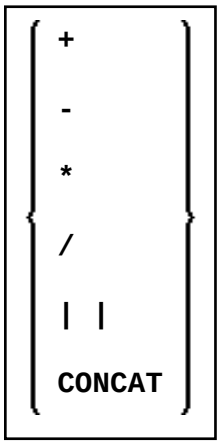
Scalar Expression

A *scalar-expression* consists of a factor or other scalar expressions including scalar operators.

Concerning reference priority, scalar expressions behave as follows:

- When a non-qualified variable name is specified in a scalar expression, the first approach is to resolve the variable name as column name of the referenced table.
- If no column with the specified name is available in the referenced table, Natural tries to resolve this variable as a Natural user-defined variable (host variable).

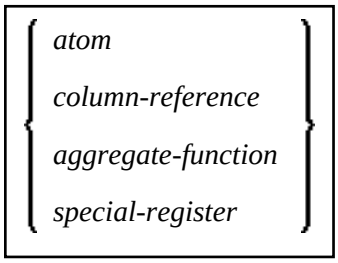
Scalar Operator



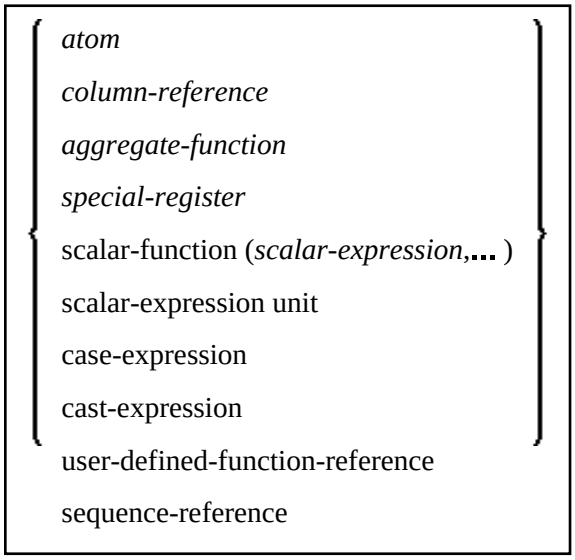
A *scalar-operator* can be any of the operators listed above; the minus (-) and slash (/) operators must be separated by at least one blank from preceding operators.

Factor

Common Set Syntax:

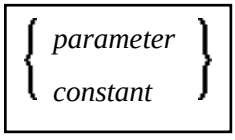


Extended Set Syntax:



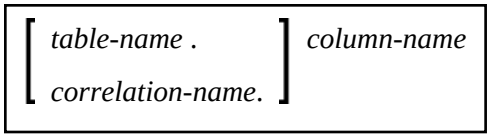
A *factor* can consist of one of the items listed in the above diagram and described in the text below.

Atom



An *atom* can be either a *parameter* or a *constant*; see also the section *Basic Syntactical Items*.

Column Reference



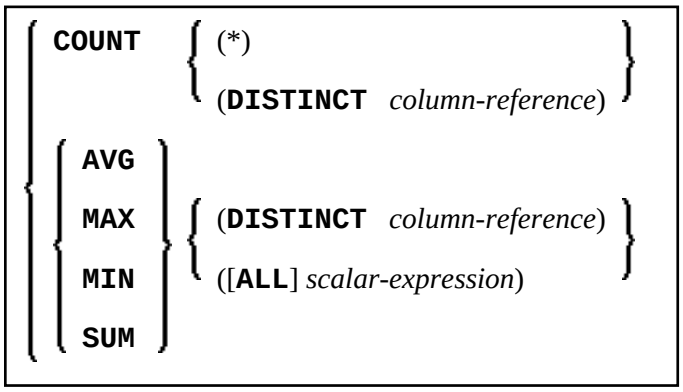
A *column-reference* is a column name optionally qualified by either a *table-name* or a *correlation-name* (see also the section *Basic Syntactical Items*). Qualified names are often clearer than unqualified names and sometimes they are essential.

Note:
A table name in this context must not be qualified explicitly with an authorization identifier. Use a correlation name instead if you need a qualified table name.

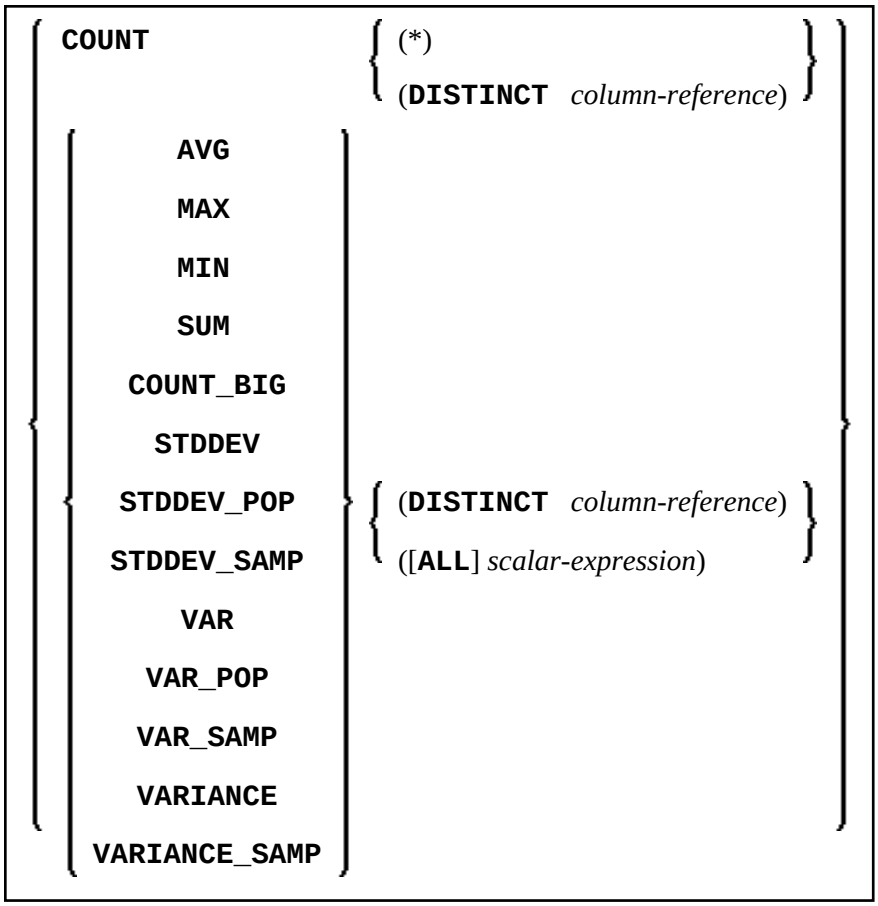
If a column is referenced by a *table-name* or *correlation-name*, it must be contained in the corresponding table. If neither a *table-name* nor a *correlation-name* is specified, the respective column must be in one of the tables specified in the `FROM` clause.

Aggregate Function

Common Set Syntax:



Extended Set Syntax:



SQL provides a number of special functions to enhance its basic retrieval power. The so-called SQL aggregate functions currently available and supported by Natural are:

AVG	gives the average of the values in a column
COUNT	gives the number of values in a column
MAX	gives the highest value in a column
MIN	gives the lowest value in a column
SUM	gives the sum of the values in a column

Apart from `COUNT(*)`, each of these functions operates on the collection of scalar values in an argument (that is, a single column or a *scalar-expression*) and produces a scalar value as its result.

Example:

```
DEFINE DATA LOCAL
1 AVGAGE   (I2)
END-DEFINE
...
SELECT AVG (AGE)
  INTO AVGAGE
  FROM SQL-PERSONNEL
  ...
```

In general, the argument can optionally be preceded by the keyword `DISTINCT` to eliminate redundant duplicate values before the function is applied.

If `DISTINCT` is specified, the argument must be the name of a single column; if `DISTINCT` is omitted, the argument can consist of a general *scalar-expression*.

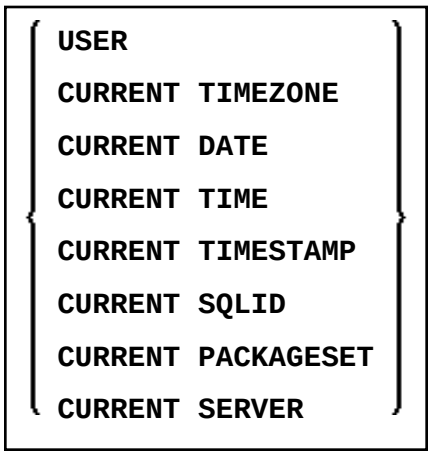
`DISTINCT` is not allowed with the special function `COUNT(*)`, which is provided to count all rows without eliminating any duplicates.

Special Register

Common Set Syntax:

USER

Extended Set Syntax:



A reference to a *special-register* returns a scalar value.

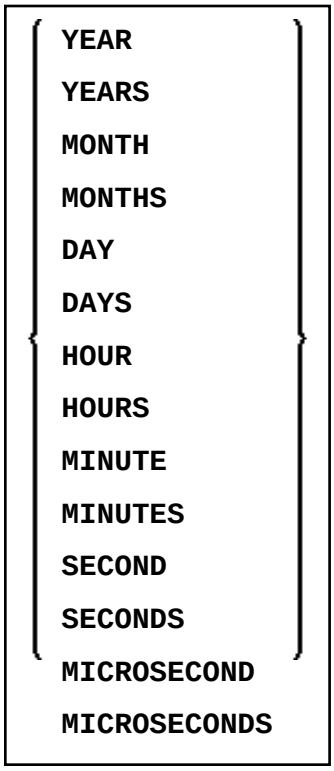
With the exception of USER, *special-registers* do not conform to standard SQL and are therefore supported by the Natural SQL Extended Set only.

Scalar Function

A *scalar-function* is a built-in function that can be used in the construction of scalar computational expressions.

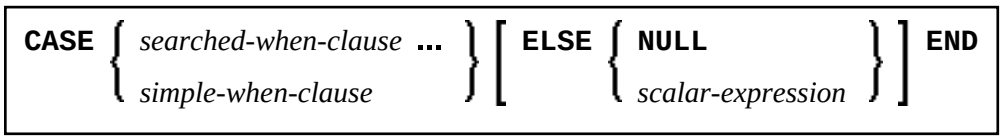
For information on the scalar-functions that are supported by the Natural SQL Extended Set, see Natural SQL Statements - Syntactical Items, *scalar-function* in the Natural for DB2 documentation.

Scalar Expression Unit



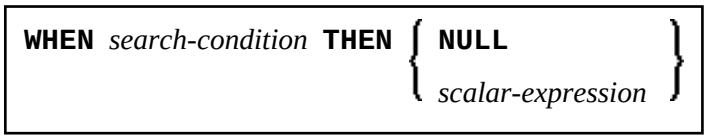
unit does not conform to standard SQL and is therefore supported by the Natural SQL Extended Set only.

Case Expression



A *case-expression* does not conform to standard SQL and is therefore supported by the Natural SQL Extended Set only.

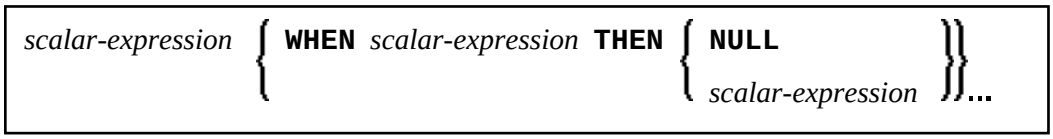
Searched WHEN Clause



A Searched When Clause does not conform to standard SQL and is therefore supported by the Natural SQL Extended Set only.

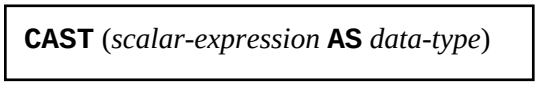
See details on *search-condition*.

Simple WHEN Clause



A Simple When Clause does not conform to standard SQL and is therefore supported by the Natural SQL Extended Set only.

Cast Expression

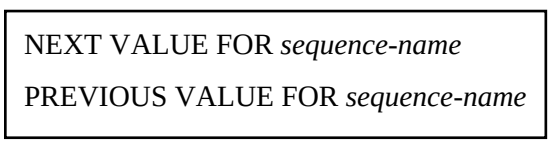


A CAST expression does not conform to standard SQL and is therefore supported by the Natural SQL Extended Set only.

User-Defined Function Reference

The option *user-defined-function-reference* belongs to the Natural SQL Extended Set. This options allows you to invoke any user-defined function. Arguments have to be placed in brackets and separated by commas. The user-defined function must be declared in the target RDBMS.

Sequence Reference



The option *sequence-reference* belongs to the Natural SQL Extended Set.

This option allows you to reference the next value or the previous value of a sequence object. The sequence object has to be created in the target RDBMS before it could be referenced at runtime.

Scalar Fullselect

(fullselect)

The option *scalar-fullselect* belongs to the Natural SQL Extended Set.

A *scalar-fullselect* as supported in an expression is a *fullselect* - enclosed in parentheses - that returns a single row consisting of a single column value. If the *fullselect* does not return a row, the result of the expression is the null value. If more than one row is to be returned for a *scalar-fullselect*, an error occurs.