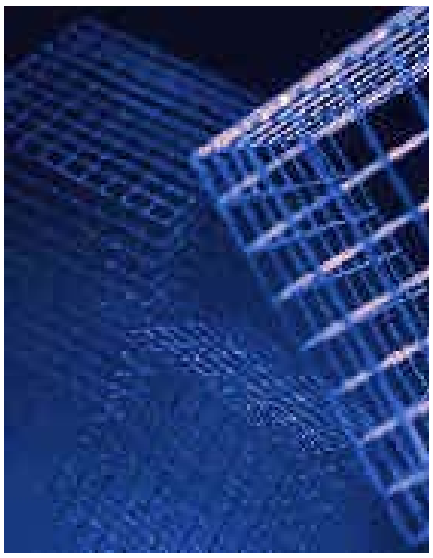
Syntax List: SAP DB



Version 7.3

Copyright

Icons

Icon	Meaning
	Caution
	Example
	Note
	Recommendation
	Syntax

Typographic Conventions

Type Style	Description
Example text	Words or characters that appear on the screen. These include field names, screen titles, pushbuttons as well as menu names, paths and options.
	Cross-references to other documentation
Example text	Emphasized words or phrases in body text, titles of graphics and tables
EXAMPLE TEXT	Names of elements in the system. These include report names, program names, transaction codes, table names, and individual key words of a programming language, when surrounded by body text, for example, SELECT and INCLUDE.
`Example text`	Screen output. This includes file and directory names and their paths, messages, names of variables and parameters, source code as well as names of installation, upgrade and database tools.
Example text	Exact user entry. These are words or characters that you enter in the system exactly as they appear in the documentation.
<Example text>	Variable user entry. Pointed brackets indicate that you replace these words and characters with appropriate entries.
`EXAMPLE TEXT`	Keys on the keyboard, for example, function keys (such as `F2`) or the `ENTER` key

Syntax List

The syntax notation [Page 11] used in this document is BNF.

The syntax rules are specified in the following form:

```
Clause ::=
  Rule
```

If you want an explanation of the syntax rules, you can use the clause link to go to the relevant part of the Reference Manual. As a result, you exit the syntax list itself.

If further syntax rules are required for the individual syntax modules, you can access these by selecting the relevant links in the left-hand part of the syntax rules, or by directly selecting the syntax module in the alphabetical syntax list.

Syntax Notation

This documentation uses the BNF syntax notation with the following conventions:

	Explanation
KEYWORDS	Keywords are shown in uppercase letters for the sake of clarity. They can be entered in uppercase or lowercase letters.
<xyz>	Terms in angle brackets are placeholders for syntactical units explained in this document. Do not use angle brackets when entering an SQL statement.
clause ::= rule	Clauses are the building blocks of SQL statements. Rules describe how these building blocks are put together to form more complex clauses and also dictate the notation that is used.
$clause_1$ $clause_2$	The two clauses are written one after the other, separated by at least one blank.
[clause]	Optional clause. This clause can be ignored. Do not use square brackets when entering an SQL statement.
Clause1 | clause2 | ... | $clause_n$	Alternative clauses. You can use exactly one of these clauses.
Clause,...	The clause can be repeated as often as required. The individual repetitions must be written one after the other and separated by a comma and any number of blanks.
Clause...	The clause can be repeated as often as required. The individual repetitions must be written directly one after the other without a separating comma or blank.

add_definition

```
<add_definition [Extern]> ::=
  ADD <column_definition [Page 15]>,...
| ADD (<column_definition>,...)
| ADD <constraint_definition [Page 16]>
| ADD <referential_constraint_definition [Page 40]>
| ADD <key_definition [Page 29]>
```

alias_name

<alias_name [Extern]> ::=
  <identifier [Page 27]>

all_function

<all_function [Extern]> ::=
  <set_function_name [Page 46]> ([ALL] <expression [Page 23]>)

alter_definition

<alter_definition [Extern]> ::=
  ALTER CONSTRAINT <constraint_name [Page 16]> CHECK <search_condition [Page 44]>
| ALTER <key_definition [Page 29]>

alter_index_statement

<alter_index_statement [Extern]> ::=
  ALTER INDEX <index_name [Page 28]> [ON <table_name [Page 50]>] ENABLE
| ALTER INDEX <index_name> [ON <table_name>] DISABLE

alter_password_statement

<alter_password_statement [Extern]>::=
  ALTER PASSWORD <old_password [Page 37]> TO <new_password>
| ALTER PASSWORD <user_name [Page 53]> <new_password>

alter_table_statement

<alter_table_statement [Extern]> ::=
  ALTER TABLE <table_name [Page 50]> <add_definition [Page 11]>
| ALTER TABLE <table_name> <drop_definition [Page 21]>
| ALTER TABLE <table_name> <alter_definition [Page 12]>
| ALTER TABLE <table_name> <column_change_definition [Page 14]>
| ALTER TABLE <table_name> <modify_definition [Page 32]>
| ALTER TABLE <table_name> <referential_constraint_definition [Page 40]>
| ALTER TABLE <table_name> DROP FOREIGN KEY <referential_constraint_name [Page 40]>
| ALTER TABLE <table_name> <sample_definition [Page 44]>

alter_user_statement

<alter_user_statement [Extern]> ::=
  ALTER USER <user_name [Page 53]> [<user_mode [Page 53]>]
    [PERMLIMIT <unsigned_integer [Page 52]> | PERMLIMIT NULL]
    [TEMPLIMIT <unsigned_integer> | TEMPLIMIT NULL]
    [TIMEOUT <unsigned_integer> | TIMEOUT NULL]
    [COSTWARNING <unsigned_integer> | COSTWARNING NULL]
    [COSTLIMIT <unsigned_integer> | COSTLIMIT NULL]
    [DEFAULT ROLE ALL [EXCEPT <role_name [Page 43]>] | DEFAULT ROLE NONE
    | DEFAULT ROLE <role_name> [IDENTIFIED BY <password [Page 37]>]]
    [[NOT] EXCLUSIVE]

alter_usergroup_statement

```
<alter_usergroup_statement [Extern]> ::=
  ALTER USERGROUP <usergroup_name [Page 53]> [<usergroup_mode [Page 53]>]
    [PERMLIMIT <unsigned_integer [Page 52]> | PERMLIMIT NULL]
    [TEMPLIMIT <unsigned_integer> | TEMPLIMIT NULL]
    [TIMEOUT <unsigned_integer> | TIMEOUT NULL]
    [COSTWARNING <unsigned_integer> | COSTWARNING NULL]
    [COSTLIMIT <unsigned_integer> | COSTLIMIT NULL]
    [DEFAULT ROLE ALL [EXCEPT <role_name [Page 43]>] | DEFAULT ROLE NONE
    | DEFAULT ROLE <role_name> [IDENTIFIED BY <password [Page 37]>]]
    [[NOT] EXCLUSIVE]
```

argument

```
<argument [Extern]> ::=
  <identifier [Page 27]>
```

arithmetic_function

```
<arithmetic_function [Extern]> ::=
  TRUNC ( <expression [Page 23]>[, <expression>] )
| ROUND ( <expression>[, <expression>] )
| NOROUND ( <expression> )
| FIXED ( <expression>[, <unsigned_integer [Page 52]> [, <unsigned_integer] ] )
| FLOAT ( <expression>[, <unsigned_integer> ] )
| CEIL ( <expression> )
| FLOOR ( <expression> )
| SIGN ( <expression> )
| ABS ( <expression> )
| POWER ( <expression>, <expression> )
| EXP ( <expression> )
| SQRT ( <expression> )
| LN ( <expression> )
| LOG ( <expression>, <expression> )
| PI
| LENGTH ( <expression> )
| INDEX ( <string_spec [Page 49]>, <string_spec> [,<expression>[, <expression>]
] )
```

assignment_statement

```
<assignment_statement [Extern]> ::=
  SET <variable_name [Page 53]> = <expression [Page 23]>
```

between_predicate

```
<between_predicate [Extern]> ::=
  <expression [Page 23]> [NOT] BETWEEN <expression> AND <expression>
```

bool_predicate

```
<bool_predicate [Extern]> ::=
  <column_spec [Page 15]> [ IS [NOT] <TRUE | FALSE>]
```

boolean_factor

<boolean_factor [Extern]> ::=
  [NOT] <predicate [Page 37]>
| [NOT] (<search_condition [Page 44]>)

boolean_term

<boolean_term [Extern]> ::=
  <boolean_factor [Page 14]>
| <boolean_term> AND <boolean_factor>

call_statement

<call_statement [Extern]> ::=
  CALL <dbproc_name [Page 19]> [(<expression [Page 23]>,...)] [WITH COMMIT]

cascade_option

<cascade_option [Extern]> ::=
  CASCADE
| RESTRICT

character

<character [Extern]> ::=
  <digit [Page 21]>
| <letter [Page 30]>
| <extended_letter [Page 24]>
| <hex_digit [Page 27]>
| <language_specific_character [Page 29]>
| <special_character [Page 47]>

close_statement

<close_statement [Extern]> ::=
  CLOSE [<result_table_name [Page 42]>]

column_attributes

<column_attributes [Extern]> ::=
  [<key_or_not_null_spec [Page 29]>] [<default_spec [Page 20]>] [UNIQUE]
[<constraint_definition [Page 16]>]
    [REFERENCES <referenced_table [Page 40]> [(<referenced_column [Page 40]>)]
[<delete_rule [Page 20]>]]

column_change_definition

<column_change_definition [Extern]> ::=
  COLUMN <column_name [Page 15]> NOT NULL

```
| COLUMN <column_name> DEFAULT NULL
| COLUMN <column_name> ADD <default_spec [Page 20]>
| COLUMN <column_name> ALTER <default_spec>
| COLUMN <column_name> DROP DEFAULT
```

column_definition

```
<column_definition [Extern]> ::=
  <column_name [Page 15]> <data_type [Page 19]> [<column_attributes [Page 14]>]
| <column_name> <domain_name [Page 21]> [<column_attributes>]
```

column_list

```
<column_list [Extern]> ::=
  <column_name [Page 15]>
| <column_list>, <column_name>
```

column_name

```
<column_name [Extern]> ::=
  <identifier [Page 27]>
```

column_spec

```
<column_spec [Extern]> ::=
  <column_name [Page 15]>
| <table_name [Page 50]>.<column_name>
| <reference_name [Page 39]>.<column_name>
| <result_table_name [Page 42]>.<column_name>
```

comment

```
<comment [Extern]> ::=
  <string_literal [Page 49]>
| <parameter_name [Page 37]>
```

comment_on_statement

```
<comment_on_statement [Extern]> ::=
  COMMENT ON <object_spec [Page 36]> IS <comment [Page 15]>
```

commit_statement

```
<commit_statement [Extern]> ::=
  COMMIT [WORK] [KEEP <lock_statement [Page 31]>]
```

comp_op

```
<comp_op [Extern]> ::=
  <
```

```
| >
| <>
| !=
| =
| <=
| >=
| ¬= | ¬< | ¬> (for machines with EBCDIC code)
| ~= | ~< | ~> (for machines with ASCII code)
```

comparison_predicate

```
<comparison_predicate [Extern]> ::=
  <expression [Page 23]> <comp_op [Page 15]> <expression>
| <expression> <comp_op> <subquery [Page 49]>
| <expression_list [Page 23]> <equal_or_not [Page 23]> (<expression_list>)
| <expression_list> <equal_or_not> <subquery>
```

connect_option

```
<connect_option [Extern]> ::=
  SQLMODE <INTERNAL | ANSI | DB2 | ORACLE>
| ISOLATION LEVEL <unsigned_integer [Page 52]>
| TIMEOUT <unsigned_integer>
| TERMCHAR SET <termchar_set_name [Page 51]>
```

connect_statement

```
<connect_statement [Extern]> ::=
  CONNECT <parameter_name [Page 37]> IDENTIFIED BY <parameter_name>
[<connect_option [Page 16]>...]
| CONNECT <parameter_name> IDENTIFIED BY <password [Page 37]>
[<connect_option>...]
| CONNECT <user_name [Page 53]> IDENTIFIED BY <parameter_name>
[<connect_option>...]
| CONNECT <user_name> IDENTIFIED BY <password> [<connect_option>...]
```

constraint_definition

```
<constraint_definition [Extern]> ::=
  CHECK <search_condition [Page 44]>
| CONSTRAINT <search_condition>
| CONSTRAINT <constraint_name [Page 16]> CHECK <search_condition>
```

constraint_name

```
<constraint_name [Extern]> ::=
  <identifier [Page 27]>
```

conversion_function

<conversion_function [Extern]> ::=
  NUM (<expression [Page 23]>)
| CHR (<expression>[, <unsigned_integer [Page 52]>])
| HEX (<expression>)
| CHAR (<expression>[, <datetimeformat [Page 19]>])

create_dbproc_statement

<create_dbproc_statement [Extern]> ::=
  CREATE DBPROC <procedure_name [Page 38]> [(<formal_parameter [Page 25]>,..)] AS
<routine [Page 43]>

create_domain_statement

<create_domain_statement [Extern]> ::=
  CREATE DOMAIN <domain_name [Page 21]> <data_type [Page 19]> [<default_spec [Page
20]>] [<constraint_definition [Page 16]>]

create_index_statement

<create_index_statement [Extern]> ::=
  CREATE [UNIQUE] INDEX <table_name [Page 50]>.<column_name [Page 15]> [ASC |
DESC]
| CREATE [UNIQUE] INDEX <index_name [Page 28]> ON <table_name> (<column_name>
[ASC | DESC],...)

create_role_statement

<create_role_statement [Extern]> ::=
  CREATE ROLE <role_name [Page 43]> [IDENTIFIED BY <password [Page 37]>]

create_sequence_statement

<create_sequence_statement [Extern]> ::=
  CREATE SEQUENCE [<owner [Page 36]>.]<sequence_name [Page 46]>
    [INCREMENT BY <integer [Page 29]>]
    [START WITH <integer>]
    [MAXVALUE <integer> | NOMAXVALUE]
    [MINVALUE <integer> | NOMINVALUE]
    [CYCLE | NOCYCLE]
    [CACHE <unsigned_integer [Page 52]> | NOCACHE]
    [ORDER | NOORDER]

create_table_statement

<create_table_statement [Extern]> ::=
  CREATE TABLE <table_name [Page 50]> (<column_definition>
    [,<table_description_element [Page 50]>,...]) [IGNORE ROLLBACK] [<sample_definition
[Page 44]>]
| CREATE TABLE <table_name> [(<table_description_element>,...)]

```
    [IGNORE ROLLBACK] [<sample_definition>] AS <query_expression [Page 39]>
[<duplicates_clause [Page 23]>]
| CREATE TABLE <table_name> LIKE <table_name> [IGNORE ROLLBACK]
```

create_table_temp

<create_table_temp [Page 48]> :: =
  <create_table_statement [Page 17]> for creating temporary tables,
  that is, the table_name [Page 50] in the CREATE TABLE statement
  must have the format TEMP.<identifier [Page 27]>.

create_trigger_statement

```
<create_trigger_statement [Extern]> ::=
  CREATE TRIGGER <trigger_name [Page 51]> FOR <table_name [Page 50]> AFTER
<trigger_event [Page 51]>,...>
    EXECUTE (<routine [Page 43]>) [WHENEVER <search_condition [Page 44]>]
```

create_user_statement

```
<create_user_statement [Extern]> ::=
  CREATE USER <user_name [Page 53]> PASSWORD <password [Page 37]>
    [<user_mode [Page 53]>]
    [PERMLIMIT <unsigned_integer [Page 52]>]
    [TEMPLIMIT <unsigned_integer>]
    [TIMEOUT <unsigned_integer>]
    [COSTWARNING <unsigned_integer>]
    [COSTLIMIT <unsigned_integer>]
    [[NOT] EXCLUSIVE]
| CREATE USER <user_name> PASSWORD <password> LIKE <source_user [Page 47]>
| CREATE USER <user_name> PASSWORD <password> USERGROUP <usergroup_name [Page
53]>
```

create_usergroup_statement

```
<create_usergroup_statement [Extern]> ::=
  CREATE USERGROUP <usergroup_name [Page 53]>
    [<usergroup_mode [Page 53]>]
    [PERMLIMIT <unsigned_integer [Page 52]>]
    [TEMPLIMIT <unsigned_integer>]
    [TIMEOUT <unsigned_integer>]
    [COSTWARNING <unsigned_integer>]
    [COSTLIMIT <unsigned_integer>]
    [[NOT] EXCLUSIVE]
```

create_view_statement

```
<create_view_statement [Extern]> ::=
  CREATE [OR REPLACE] VIEW <table_name [Page 50]> [(<alias_name [Page 12]>,...)]
    AS <query_expression [Page 39]> [WITH CHECK OPTION]
```

data_type

<data_typ [Extern]> ::=
  CHAR[ACTER] [(<unsigned_integer [Page 52]>)] [ASCII | BYTE | EBCDIC | UNICODE]
| VARCHAR [(<unsigned_integer>)] [ASCII | BYTE | EBCDIC | UNICODE]
| LONG [VARCHAR] [ASCII | BYTE | EBCDIC | UNICODE]
| BOOLEAN
| FIXED (<unsigned_integer> [,<unsigned_integer>])
| FLOAT (<unsigned_integer>)
| INT[EGER]
| SMALLINT
| DATE
| TIME
| TIMESTAMP

date_function

<date_function [Extern]> ::=
  ADDDATE (<date_or_timestamp_expression [Page 19]>, <expression [Page 23]>)
| SUBDATE (<date_or_timestamp_expression>, <expression>)
| DATEDIFF (<date_or_timestamp_expression>, <date_or_timestamp_expression>
)
| DAYOFWEEK (<date_or_timestamp_expression>)
| WEEKOFYEAR (<date_or_timestamp_expression>)
| DAYOFMONTH (<date_or_timestamp_expression>)
| DAYOFYEAR (<date_or_timestamp_expression>)
| MAKEDATE (<expression>, <expression>)
| DAYNAME (<date_or_timestamp_expression>)
| MONTHNAME (<date_or_timestamp_expression>)

date_or_timestamp_expression

<date_or_timestamp_expression [Extern]> ::=
  <expression [Page 23]>

datetimeformat

<datetimeformat [Extern]> ::=
  EUR
| INTERNAL
| ISO
| JIS
| USA

dbproc_name

<dbproc_name [Extern]> ::=
  [<owner [Page 36]>.]<procedure_name [Page 38]>

declare_cursor_statement

<declare_cursor_statement [Extern]> ::=
  DECLARE <result_table_name [Page 42]> CURSOR FOR <select_statement [Page 46]>

default_predicate

<default_predicate [Extern]> ::=
  <column_spec [Page 15]> <comp_op [Page 15]> DEFAULT

default_spec

<default_spec [Extern]> ::=
  DEFAULT <literal [Page 30]>
| DEFAULT NULL
| DEFAULT USER
| DEFAULT USERGROUP
| DEFAULT DATE
| DEFAULT TIME
| DEFAULT TIMESTAMP
| DEFAULT TRUE
| DEFAULT FALSE
| DEFAULT TRANSACTION
| DEFAULT STAMP
| DEFAULT SERIAL[(<unsigned_integer [Page 52]>)]

delete_rule

<delete_rule [Extern]> ::=
  ON DELETE CASCADE
| ON DELETE RESTRICT
| ON DELETE SET DEFAULT
| ON DELETE SET NULL

delete_statement

<delete_statement [Extern]> ::=
  DELETE [FROM] <table_name [Page 50]> [<reference_name [Page 39]>]
    [KEY <key_spec [Page 29]>,...] [WHERE <search_condition [Page 44]>]
| DELETE [FROM] <table_name> [<reference_name>]
    WHERE CURRENT OF <result_table_name [Page 42]>

Delimiter token

<delimiter_token [Extern]> ::=
  (|) | , | . | + | - | * | / | < | > | <> | != | = | <= | >=
| ¬= | ¬< | ¬> (for machines with EBCDIC code)
| ~= | ~< | ~> (for machines with ASCII code)

derived_column

<derived_column [Extern]> ::=
  <expression [Page 23]> [[AS] <result_column_name [Page 42]>]
| <result_column_name> = <expression>

digit

<digit [Extern]> ::=
  0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9

digit_sequence

<digit_sequence [Extern]> ::=
  <digit [Page 21]>...

distinct_function

<distinct_function [Extern]>::=
  <set_function_name [Page 46]> (DISTINCT <expression [Page 23]>)

distinct_spec

<distinct_spec [Extern]> ::=
  DISTINCT
| ALL

domain_name

<domain_name [Extern]> ::=
  [<owner [Page 36]>.]<identifier [Page 27]>

double_quotes

<double_quotes [Extern]> ::=
  "

drop_dbproc_statement

<drop_dbproc_statement [Extern]> ::=
  DROP DBPROC <dbproc_name [Page 19]>

drop_definition

<drop_definition [Extern]> ::=
  DROP <column_name [Page 15]>,... [<cascade_option [Page 14]>] [RELEASE SPACE]
| DROP (<column_name>,...) [<cascade_option>] [RELEASE SPACE]
| DROP CONSTRAINT <constraint_name [Page 16]>
| DROP PRIMARY KEY

drop_domain_statement

<drop_domain_statement [Extern]> ::=
  DROP DOMAIN <domain_name [Page 21]>

drop_index_statement

<drop_index_statement [Extern]> ::=
  DROP INDEX <table_name>.<column_name [Page 15]>
| DROP INDEX <index_name [Page 28]> [ON <table_name [Page 50]>]

drop_role_statement

<drop_role_statement [Extern]> ::=
  DROP ROLE <role_name [Page 43]>

drop_sequence_statement

<drop_sequence_statement [Extern]> ::=
  DROP SEQUENCE [<owner [Page 36]>.]<sequence_name [Page 46]>

drop_synonym_statement

<drop_synonym_statement [Extern]> ::=
  DROP [PUBLIC] SYNONYM [<owner [Page 36]>.]<synonym_name [Page 50]>

drop_table_statement

<drop_table_statement [Extern]> ::=
  DROP TABLE <table_name [Page 50]> [<cascade_option [Page 14]>]

drop_trigger_statement

<drop_trigger_statement [Extern]> ::=
  DROP TRIGGER <trigger_name [Page 51]> OF <table_name [Page 50]>

drop_user_statement

<drop_user_statement [Extern]> ::=
  DROP USER <user_name [Page 53]> [<cascade_option [Page 14]>]

drop_usergroup_statement

<drop_usergroup_statement [Extern]> ::=
  DROP USERGROUP <usergroup_name [Page 53]> [<cascade_option [Page 14]>]

drop_view_statement

<drop_view_statement [Extern]> ::=
  DROP VIEW <table_name [Page 50]> [<cascade_option [Page 14]>]

duplicates_clause

```
<duplicates_clause [Extern]> ::=
  REJECT DUPLICATES
| IGNORE DUPLICATES
| UPDATE DUPLICATES
```

equal_or_not

```
<equal_or_not [Extern]> ::=
  <>
| =
| ¬= (for machines with EBCDIC code)
| ~= (for machines with ASCII code)
```

exists_predicate

```
<exists_predicate [Extern]> ::=
  EXISTS <subquery [Page 49]>
```

exists_table_statement

```
<exists_table_statement [Extern]> ::=
  EXISTS TABLE <table_name [Page 50]>
```

explain_statement

```
<explain_statement [Extern]> ::=
  EXPLAIN [(<result_table_name [Page 42]>)] <query_statement [Page 39]>
| EXPLAIN [(<result_table_name>)] <single_select_statement [Page 47]>
```

exponent

```
<exponent [Extern]> ::=
  [<sign [Page 47]>][[<digit [Page 21]>]<digit>]<digit>
```

expression

```
<expression [Extern]> ::=
  <term [Page 50]>
| <expression> + <term>
| <expression> - <term>
```

expression_list

```
<expression_list [Extern]> ::=
  (<expression [Page 23]>,...)
```

extended_expression

<extended_expression [Extern]> ::=
  <expression [Page 23]>
| DEFAULT
| STAMP

extended_letter

<extended_letter [Extern]> ::=
  #
| @
| $

extended_value_spec

<extended_value_spec [Extern]> ::=
  <value_spec [Page 53]>
| DEFAULT
| STAMP

extraction_function

<extraction_function [Extern]> ::=
  YEAR (<date_or_timestamp_expression [Page 19]>)
| MONTH (<date_or_timestamp_expression>)
| DAY (<date_or_timestamp_expression>)
| HOUR (<time_or_timestamp_expression [Page 51]>)
| MINUTE (<time_or_timestamp_expression>)
| SECOND (<time_or_timestamp_expression>)
| MICROSECOND (<expression [Page 23]>)
| TIMESTAMP (<expression>[, <expression>])
| DATE (<expression>)
| TIME (<expression>)

factor

<factor [Extern]> ::=
  [<sign [Page 47]>] <value_spec [Page 53]>
| [<sign>] <column_spec [Page 15]>
| [<sign>] <function_spec [Page 26]>
| [<sign>] <set_function_spec [Page 46]>
| <expression [Page 23]>

fetch_statement

<fetch_statement [Extern]> ::=
  FETCH [FIRST | LAST | NEXT | PREV | <position [Page 37]> | SAME]
[<result_table_name [Page 42]>]
    INTO <parameter_spec [Page 37]>,...

final_select

<final_select [Extern]> ::=
  <select_statement [Page 46]>

first_character

<first_character [Extern]> ::=
  <letter [Page 30]>
| <extended_letter [Page 24]>
| <language_specific_character [Page 29]>

first_password_character

<first_password_character [Extern]> ::=
  <letter [Page 30]>
| <extended_letter [Page 24]>
| <language_specific_letter [Page 29]>
| <digit [Page 21]>

fixed_point_literal

<fixed_point_literal [Extern]> ::=
  [<sign [Page 47]>]<digit_sequence [Page 21]>[.<digit_sequence>]
| [sign]<digit_sequence>.
| [sign].<digit_sequence>

floating_point_literal

<floating_point_literal [Extern]> ::=
  <mantissa [Page 31]>E<exponent [Page 23]>
| <mantissa>e<exponent>

formal_parameter

<formal_parameter [Extern]> ::=
  IN <argument [Page 13]> <data_type [Page 19]>
| OUT <argument> <data_type>
| INOUT <argument> <data_type>

from_clause

<from_clause [Extern]> ::=
  FROM <from_table_spec [Page 25]>,...

from_table_spec

<from_table_spec [Extern]> ::=
  <table_name [Page 50]> [<reference_name [Page 39]>]
| <result_table_name [Page 42]> [<reference_name>]

```
| (<query_expression [Page 39]>) [<reference_name>]
| <joined_table [Page 29]>
```

function_spec

```
<function_spec [Extern]> ::=
  <arithmetic_function [Page 13]>
| <trigonometric_function [Page 51]>
| <string_function [Page 49]>
| <date_function [Page 19]>
| <time_function [Page 51]>
| <extraction_function [Page 24]>
| <special_function [Page 48]>
| <conversion_function [Page 17]>
```

grant_statement

```
<grant_statement [Extern]> ::=
  GRANT <priv_spec [Page 38]>,... TO <grantee [Page 26]>,... [WITH GRANT OPTION]
| GRANT EXECUTE ON <dbproc_name [Page 19]> TO <grantee>,...
| GRANT SELECT ON <sequence_name [Page 46]> TO <grantee>,... [WITH GRANT
OPTION]
```

grant_user_statement

```
<grant_user_statement [Extern]> ::=
  GRANT USER <granted_users [Page 26]> [FROM <user_name [Page 53]>] TO <user_name>
```

grant_usergroup_statement

```
<grant_usergroup_statement [Extern]> ::=
  GRANT USERGROUP <granted_usergroups [Page 26]> [FROM <user_name [Page 53]>] TO
<user_name>
```

granted_usergroups

```
<granted_usergroups [Extern]> ::=
  <usergroup_name [Page 53]>,...
| *
```

granted_users

```
<granted_users [Extern]> ::=
  <user_name [Page 53]>,...
| *
```

grantee

```
<grantee [Extern]> ::=
  PUBLIC
| <user_name [Page 53]>
```

| <usergroup_name [Page 53]>
| <role_name [Page 43]>

group_clause

<group_clause [Extern]> ::=
  GROUP BY <expression [Page 23]>,...

having_clause

<having_clause [Extern]> ::=
  HAVING <search_condition [Page 44]>

hex_digit

<hex_digit [Extern]> ::=
  0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9
| A | B | C | D | E | F
| a | b | c | d | e | f

hex_digit_seq

<hex_digit_seq [Extern]> ::=
  <hex_digit [Page 27]><hex_digit>
| <hex_digit_seq><hex_digit><hex_digit>

hex_literal

<hex_literal [Extern]> ::=
  x''
| X''
| x'<hex_digit_seq [Page 27]>'
| X'<hex_digit_seq>'

hours

<hours [Extern]> ::=
  <expression [Page 23]>

identifier

<identifier [Extern]> ::=
  <simple_identifier [Page 47]>
| <double quotes [Page 21]><special_identifier [Page 48]><double_quotes>

identifier_tail_character

<identifier_tail_character [Extern]> ::=
  <letter [Page 30]>
| <extended_letter [Page 24]>
| <language_specific_character [Page 29]>

| <digit [Page 21]>
| <underscore [Page 52]>

if_statement

<if_statement [Extern]> ::=
  IF <search_condition [Page 44]> THEN <statement [Page 48]> [ELSE <statement>]

in_predicate

<in_predicate [Extern]> ::=
  <expression [Page 23]> [NOT] IN <subquery [Page 49]>
| <expression> [NOT] IN <expression_list [Page 23]>
| <expression_list> [NOT] IN <subquery>
| <expression_list> [NOT] IN (<expression_list>,...)

index_name

<index_name [Extern]> ::=
  <identifier [Page 27]>

index_pos_spec

<index_pos_spec [Extern]> ::=
  INDEX <column_name [Page 15]> = <value_spec [Page 53]>
| INDEXNAME <index_name [Page 28]> VALUES (<value_spec>,...)

indicator_name

<indicator_name [Extern]> ::=
  <parameter_name [Page 37]>

initial_select

<initial_select [Extern]> ::=
  <query_spec [Page 39]>

insert_expression

<insert_expression [Extern]> ::=
  <extended_expression [Page 24]>
| <subquery [Page 49]>

insert_statement

<insert_statement [Extern]> ::=
  INSERT [INTO] <table_name [Page 50]> [(<column_name [Page 15]>,...)]
    VALUES (<insert_expression [Page 28]>,...) [<duplicates_clause [Page 23]>]
| INSERT [INTO] <table_name> [(<column_name>,...)]
    <query_expression [Page 39]> [<duplicates_clause>]

```
| INSERT [INTO] <table_name> SET <set_insert_clause [Page 46]>,...
[<duplicates_clause>]
```

integer

```
<integer [Extern]> ::=
  [sign [Page 47]]<unsigned_integer [Page 52]>
```

join_predicate

```
<join_predicate [Extern]> ::=
  <expression [Page 23]> [<outer_join_indicator [Page 36]>] <comp_op [Page 15]>
<expression> [<outer_join_indicator>]
```

join_spec

```
<join_spec> ::=
  ON <search_condition [Page 44]>
| USING (<column_name [Page 15]>,...)
```

joined_table

```
<joined_table [Extern]> ::=
  <from_table_spec [Page 25]> CROSS JOIN <from_table_spec>
| <from_table_spec> [INNER] JOIN <from_table_spec> <join_spec [Page 29]>
| <from_table_spec> [<LEFT | RIGHT | FULL> [OUTER]] JOIN
    <from_table_spec> <join_spec>
```

key_definition

```
<key_definition [Extern]> ::
  PRIMARY KEY (<column_name [Page 15]>,...)
```

key_or_not_null_spec

```
<key_or_not_null_spec [Extern]> ::=
  [PRIMARY] KEY
| NOT NULL [WITH DEFAULT]
```

key_spec

```
<key_spec [Extern]> ::=
  <column_name [Page 15]> = <value_spec [Page 53]>
```

language_specific_character

```
<language_specific_character [Extern]> ::=
  <every letter that occurs in a Northern, Central, or Southern European language
    and is not included in the <letter [Page 30]> list>
| <for UNICODE-enabled databases: every character that is not included in the ASCII code list from
0 to 127>
```

letter

<letter [Extern]> ::=
  A | B | C | D | E | F | G | H | I | J | K | L | M
| N | O | P | Q | R | S | T | U | V | W | X | Y | Z
| a | b | c | d | e | f | g | h | i | j | k | l | m
| n | o | p | q | r | s | t | u | v | w | x | y | z

like_expression

<like_expression [Extern]> ::=
  <expression [Page 23]>
| '<pattern_element [Page 37]>...'

like_predicate

<like_predicate [Extern]> ::=
  <expression [Page 23]> [NOT] LIKE <like_expression [Page 30]> [ESCAPE <expression>]

literal

<literal [Extern]> ::=
  <string_literal [Page 49]>
| <numeric_literal [Page 33]>

local_variable

<local_variable [Extern]> ::=
  <variable_name [Page 53]> <data_type [Page 19]>

local_variable_list

<local_variable_list [Extern]> ::=
  <local_variable [Page 30]>
| <local_variable_list>;<local_variable>

local_variables

<local_variables [Extern]> ::=
  VAR <local_variable_list [Page 30]>;

lock_option

<lock_option [Extern]> ::=
  WITH LOCK [(NOWAIT)] [EXCLUSIVE | OPTIMISTIC] [ISOLATION LEVEL
<unsigned_integer [Page 52]>]

lock_spec

<lock_spec [Extern]> ::=
  TABLE <table_name [Page 50]>,...
| <row_spec [Page 43]>...
| TABLE <table_name>,... <row_spec>...

lock_statement

<lock_statement [Extern]> ::=
  LOCK [(WAIT) | (NOWAIT)] <lock_spec [Page 31]> IN SHARE MODE
| LOCK [(WAIT) | (NOWAIT)] <lock_spec> IN EXCLUSIVE MODE
| LOCK [(WAIT) | (NOWAIT)] <row_spec [Page 43]>... OPTIMISTIC
| LOCK [(WAIT) | (NOWAIT)] <lock_spec> IN SHARE MODE <lock_spec> IN EXCLUSIVE MODE

mantissa

<mantissa [Extern]> ::=
  <fixed_point_literal [Page 25]>

mapchar_set_name

<mapchar_set_name [Extern]> ::=
  <identifier [Page 27]>

match_char

<match_char [Extern]> ::=
  Every character except
    %
  | *
  | X'1F'
  | <underscore [Page 52]>
  | ?
  | X'1E'
  | (

match_class

<match_class [Extern]> ::=
  <match_range [Page 32]>
| <match_element [Page 31]>

match_element

<match_element [Extern]> ::=
  Every character except
)

match_range

<match_range [Extern]> ::=
  <match_element [Page 31]>-<match_element>

Match set

<match_set [Extern]> ::=
  <underscore [Page 52]>
| ?
| X'1E'
| <match_char [Page 31]>
| ([<
      ∧ (only for code type EBCDIC)
    | ~ (only for code type ASCII)
    | ¬
      >]<match_class [Page 31]>...)

match_string

<match_string [Extern]> ::=
  %
| *
| X'1F'

minutes

<minutes [Extern]> ::=
  <expression [Page 23]>

modify_definition

<modify_definition [Extern]> ::=
  MODIFY (<column_name [Page 15]> [<data_type [Page 19]>] [<column_attributes [Page 14]>]...)

monitor_statement

<monitor_statement [Extern]> ::=
  MONITOR INIT

named_query_expression

<named_query_expression [Extern]> ::=
  <named_query_term [Page 33]>
| <named_query_expression> UNION [ALL] <query_term [Page 39]>
| <named_query_expression> EXCEPT [ALL] <query_term>

named_query_primary

<named_query_primary [Extern]> ::=
  <named_query_spec [Page 33]>
| (<named_query_expression [Page 32]>)

named_query_spec

<named_query_spec [Extern]> ::=
  SELECT [<distinct_spec [Page 21]>] <result_table_name [Page 42]> (<select_column [Page 44]>,...) <table_expression [Page 50]>

named_query_term

<named_query_term [Extern]> ::=
  <named_query_primary [Page 33]>
| <named_query_term> INTERSECT [ALL] <query_primary [Page 39]>

named_select_statement

<named_select_statement [Extern]> ::=
  <named_query_expression [Page 32]> [<order_clause [Page 36]>] [<update_clause [Page 52]>] [<lock_option [Page 30]>] [FOR REUSE]

new_index_name

<new_index_name [Extern]> ::=
  <index_name [Page 28]>

new_table_name

<new_table_name [Extern]> ::=
  <table_name [Page 50]>

next_stamp_statement

<next_stamp_statement [Extern]> ::=
  NEXT STAMP [INTO] <parameter_name [Page 37]>

null_predicate

<null_predicate [Extern]> ::=
  <expression [Page 23]> IS [NOT] NULL

numeric_literal

<numeric_literal [Extern]> ::=
  <fixed_point_literal [Page 25]>
| <floating_point_literal [Page 25]>

not_reserved_key_word

<not_reserved_key_word [Extern]> ::=

ACCOUNTING	ACTION	ACTIVATE	ADD	ADD_MONTHS
AFTER	ANALYZE	AND	ANSI	APPEND
AS	ASC	AT	AUDIT	AUTOSAVE
BACKUP_PAGES	BAD	BEFORE	BEGIN	BEGINLOAD
BEGINPROC	BETWEEN	BLOCKSIZE	BOTH	BREAK
BUFFER	BUFFERPOOL	BY		
CACHE	CACHELIMIT	CACHES	CALL	CANCEL
CASCADE	CAST	CATALOG	CATCH	CHECKPOINT
CLEAR	CLOSE	CLUSTER	COLD	COMMENT
COMMIT	COMPLETE	COMPUTE	CONFIG	CONNECT
CONSTRAINTS	CONTAINER	CONTINUE	COPY	COSTLIMIT
COSTWARNING	CREATE	CURRENT_DATE	CURRENT_TIME	CURRENT_TIME
CURRVAL	CURSOR	CYCLE		
DATA	DAYS	DB2	DBA	DBFUNCTION
DBPROC	DBPROCEDURE	DB_ABOVE_LIMIT	DB_BELOW_LIMIT	DECLARE
DEGREE	DESC	DESCRIBE	DESTPOS	DEVICE
DEVSPACE	DIAGNOSE	DISABLE	DIV	DO
DOMAIN	DOMAINDEF	DROP	DSETPASS	DUPLICATES
DW_COMPRESS	DW_DISPLACE	DYNAMIC		
EDITPROC	ELSE	ENABLE	END	ENDLOAD
ENDPOS	ERROR	ESCAPE	ESTIMATE	EUR
EVENT	EXCLUSIVE	EXECUTE	EXPLAIN	EXPLICIT
EXTRACT				
FALSE	FETCH	FILE	FIRSTPOS	FNULL
FORCE	FOREIGN	FORMAT	FREAD	FREEPAGE
FVERSION	FWRITE			
GET	GRANT	GRANTED		
HEXTORAW	HIGH	HOLD	HOURS	
IDENTIFIED	IF	IMPLICIT	IN	INCREMENT
INDEXNAME	INDICATOR	INIT	INITRANS	INOUT
INPROC	INSTANCE	INSTR	IS	ISO
ISOLATION				
JIS				
KEEP				
LABEL	LANGUAGE	LASTPOS	LAST_DAY	LEADING
LEVEL	LIKE	LOAD	LOCAL	LOCK

LOGFULL	LOG_ABOVE_LIMIT	LOW		
MAXTRANS	MAXVALUE	MEDIANAME	MEDIUM	MICROSECONDS
MINUS	MINUTES	MINVALUE	MODE	MODIFY
MONITOR	MONTHS	MONTHS_BETWEEN		
NEW_TIME	NEXTVAL	NEXT_DAY	NLSSORT	NLS_DATE_FOR
NLS_DATE_LANGUAGE	NLS_LANGUAGE	NLS_SORT	NOCACHE	NOCYCLE
NOLOG	NOMAXVALUE	NOMINVALUE	NONE	NOORDER
NOREWIND	NORMAL	NOSORT	NOWAIT	NUMBER
NVL				
OBID	OFF	ONLY	OPEN	OPTIMISTIC
OPTIMIZE	OPTION	OR	ORACLE	OUT
OUTER	OVERWRITE			
PACKAGE	PAGES	PARAM	PARSE	PARSEID
PARTICIPANTS	PASSWORD	PATTERN	PCTFREE	PCTUSED
PERCENT	PERMLIMIT	PIPE	POS	PRECISION
PRIV	PRIVILEGES	PROC	PROCEDURE	PSM
PUBLIC				
QUICK				
RANGE	RAW	RAWTOHEX	READ	RECURSIVE
REFERENCES	REFRESH	RELEASE	REMOTE	RENAME
RESOURCE	REST	RESTART	RESTORE	RESTRICT
REUSE	REVOKE	RFETCH	ROLE	ROLLBACK
ROW	ROWNUM	ROWS		
SAME	SAMPLE	SAVE	SAVEPOINT	SCHEMA
SEARCH	SECONDS	SEGMENT	SELECTIVITY	SEQUENCE
SERVERDB	SESSION	SHARE	SHUTDOWN	SNAPSHOT
SOUNDS	SOURCEPOS	SQLID	SQLMODE	STANDARD
START	STARTPOS	STAT	STATE	STOP
STORAGE	SUBPAGES	SUBTRANS	SWITCH	SYNONYM
SYSDATE				
TABID	TABLEDEF	TABLESPACE	TAPE	TEMP
TEMPLIMIT	TERMCHAR	THEN	TIMEOUT	TO_CHAR
TO_DATE	TO_NUMBER	TRACE	TRAILING	TRANSFILE
TRIGGER	TRIGGERDEF	TRUE	TRY	TYPE
UNIQUE	UNKNOWN	UNLOAD	UNLOCK	UNTIL
USA	USAGE	USERID		
VALIDPROC	VARCHAR2	VARYING	VERIFY	VERSION
VIEW	VSIZE	VTRACE		
WAIT	WHENEVER	WHILE	WORK	WRITE

YEARS				

object_spec

```
<object_spec [Extern]> ::=
  COLUMN <table_name [Page 50]>.<column_name [Page 15]>
| DBPROC[EDURE] <dbproc_name [Page 19]>
| DOMAIN <domain_name [Page 21]>
| FOREIGN KEY <table_name>.<referential_constraint_name [Page 40]>
| INDEX <index_name [Page 28]> ON <table_name>
| INDEX <table_name>.<column_name>
| SEQUENCE <sequence_name [Page 46]>
| [PUBLIC] SYNONYM <synonym_name [Page 50]>
| TABLE <table_name>
| TRIGGER <trigger_name [Page 51]> ON <table_name>
| USER <user_name [Page 53]>
| USERGROUP <usergroup_name [Page 53]>
| <parameter_name [Page 37]>
```

old_index_name

```
<old_index_name [Extern]> ::=
  <index_name [Page 28]>
```

old_table_name

```
<old_table_name [Extern]> ::=
  <table_name [Page 50]>
```

open_cursor_statement

```
<open_cursor_statement [Extern]> ::=
  OPEN <result_table_name [Page 42]>
```

order_clause

```
<order_clause [Extern]> ::=
  ORDER BY <sort_spec [Page 47]>,...
```

outer_join_inidicator

```
<outer_join_inidicator [Extern]> ::=
  (+)
```

owner

```
<owner [Extern]> ::=
  <user_name [Page 53]>
```

| <usergroup_name [Page 53]>
| TEMP

parameter_name

<parameter_name [Extern]> ::=
  :<identifier [Page 27]>
| :<identfier>(<identifier>)
| :<identfier>(.<identifier>.)

parameter_spec

<parameter_spec [Extern]> ::=
  <parameter_name [Page 37]> [<indicator_name [Page 28]>]

password

<password [Extern]> ::=
  <identifier [Page 27]>
| <first_password_character [Page 25]>[<identifier_tail_character [Page 27]>...]

pattern_element

<pattern_element [Extern]> ::=
  <match_string [Page 32]>
| <match_set [Page 32]>

pos_spec

<pos_spec [Extern]> ::=
  INDEX <column_name [Page 15]>
| INDEXNAME <index_name [Page 28]>
| <index_pos_spec [Page 28]> [KEY <key_spec [Page 29]>,...]
| KEY <key_spec>,...

position

<position [Extern]> ::=
  POS (<unsigned_integer [Page 52]>)
| POS (<parameter_spec [Page 37]>)
| ABSOLUTE <integer [Page 29]>
| ABSOLUTE <parameter_spec>
| RELATIVE <integer>
| RELATIVE <parameter_spec>

predicate

<predicate [Extern]> ::=
  <between_predicate [Page 13]>
| <bool_predicate [Page 13]>
| <comparison_predicate [Page 16]>

| <default_predicate [Page 20]>
| <exists_predicate [Page 23]>
| <in_predicate [Page 28]>
| <join_predicate [Page 29]>
| <like_predicate [Page 30]>
| <null_predicate [Page 33]>
| <quantified_predicate [Page 38]>
| <rowno_predicate [Page 44]>
| <sound_predicate [Page 47]>

priv_spec

<priv_spec [Extern]> ::=
  ALL [PRIV[ILEGES]] ON [TABLE] <table_name [Page 50]>,...
| <privilege [Page 38]>,... ON [TABLE] <table_name>,...
| <role_name [Page 43]>

privilege

<privilege [Extern]> ::=
  INSERT
| UPDATE [(<column_name [Page 15]>,...)]
| SELECT [(<column_name>,...)]
| SELUPD [(<column_name>,...)]
| DELETE
| INDEX
| ALTER
| REFERENCES [(<column_name>,...)]

procedure_name

<procedure_name [Extern]> ::=
  <identifier [Page 27]>

quantified_predicate

<quantified_predicate [Extern]> ::=
  <expression [Page 23]> <comp_op [Page 15]> <quantifier [Page 38]> <expression_list [Page 23]>
| <expression> <comp_op> <quantifier> <subquery [Page 49]>
| <expression_list> <equal_or_not [Page 23]> <quantifier> (<expression_list>,...)
| <expression_list> <equal_or_not> <quantifier> <subquery>

quantifier

<quantifier [Extern]> ::=
  ALL
| SOME
| ANY

query_expression

<query_expression [Extern]> ::=
  <query_term [Page 39]>
| <query_expression> UNION [ALL] <query_term>
| <query_expression> EXCEPT [ALL] <query_term>

query_primary

<query_primary [Extern]> ::=
  <query_spec [Page 39]>
| (<query_expression [Page 39]>)

query_spec

<query_spec [Extern]> ::=
  SELECT [<distinct_spec [Page 21]>] <select_column [Page 44]>,... <table_expression [Page 50]>

query_statement

<query_statement [Extern]> ::=
  <declare_cursor_statement [Page 19]>
| <recursive_declare_cursor_statement [Page 39]>
| <named_select_statement [Page 33]>
| <select_statement [Page 46]>

query_term

<query_term [Extern]> ::=
  <query_primary [Page 39]>
| <query_term> INTERSECT [ALL] <query_primary>

recursive_declare_cursor_statement

<recursive_declare_cursor_statement [Extern]> ::=
  DECLARE <result_table_name [Page 42]> CURSOR FOR WITH RECURSIVE <reference_name [Page 39]>
    (<alias_name [Page 12]>,...) AS (<initial_select [Page 28]> UNION ALL
<recursive_select [Page 39]>) <final_select [Page 25]>

recursive_select

<recursive_select [Extern]> ::=
  <query_spec [Page 39]>

reference_name

<reference_name [Extern]> ::=
  <identifier [Page 27]>

referenced_column

<referenced_column [Extern]> ::=
  <column_name [Page 15]>

referenced_table

<referenced_table [Extern]> ::=
  <table_name [Page 50]>

referencing_column

<referencing_column [Extern]> ::=
  <column_name [Page 15]>

referential_constraint_definition

<referential_constraint_definition [Extern]> ::=
  FOREIGN KEY [<referential_constraint_name [Page 40]>] (<referencing_column [Page 40]>,...)
    REFERENCES <referenced_table [Page 40]> [(<referenced_column [Page 40]>,...)]
[<delete_rule [Page 20]>]

regular_token

<regular_token [Extern]> ::=
  <literal [Page 30]>
| <key_word [Page 29]>
| <identifier [Page 27]>
| <parameter_name [Page 37]>

release_statement

<release_statement [Extern]> ::=
  COMMIT [WORK] RELEASE
| ROLLBACK [WORK] RELEASE

rename_column_statement

<rename_column_statement [Extern]> ::=
  RENAME COLUMN <table_name [Page 50]>.<column_name [Page 15]> TO <column_name>

rename_index_statement

<rename_index_statement [Extern]> ::=
  RENAME INDEX <old_index_name [Page 36]> [ON <table_name [Page 50]>] TO
<new_index_name [Page 33]>

rename_synonym_statement

<rename_synonym_statement [Extern]> ::=
RENAME [PUBLIC] SYNONYM <old_synonym_name [Page 50]> TO <new_synonym_name>

rename_table_statement

<rename_table_statement [Extern]> ::=
RENAME TABLE <old_table_name [Page 36]> TO <new_table_name [Page 33]>

rename_user_statement

<rename_user_statement [Extern]> ::=
RENAME USER <user_name [Page 53]> TO <new_user_name [Page 53]>

rename_view_statement

<rename_view_statement [Extern]> ::=
RENAME VIEW <old_table_name [Page 36]> TO <new_table_name [Page 33]>

reserved_key_word

<reserved_key_word [Extern]> ::=

ABS	ABSOLUTE	ACOS	ADDDATE	ADDTIME
ALL	ALPHA	ALTER	ANY	ASCII
ASIN	ATAN	ATAN2	AVG	
BINARY	BIT	BOOLEAN	BYTE	
CEIL	CEILING	CHAR	CHARACTER	CHECK
CHR	COLUMN	CONCAT	CONNECTED	CONSTRAINT
COS	COSH	COT	COUNT	CROSS
CURDATE	CURRENT	CURTIME		
DATABASE	DATE	DATEDIFF	DAY	DAYNAME
DAYOFMONTH	DAYOFWEEK	DAYOFYEAR	DBYTE	DEC
DECIMAL	DECODE	DEFAULT	DEGREES	DELETE
DIGITS	DIRECT	DISTINCT	DOUBLE	
EBCDIC	EXCEPT	EXISTS	EXP	EXPAND
FIRST	FIXED	FLOAT	FLOOR	FOR
FROM	FULL			
GRAPHIC	GREATEST	GROUP		
HAVING	HEX	HOUR		
IFNULL	IGNORE	INDEX	INITCAP	INNER
INSERT	INT	INTEGER	INTERNAL	INTERSECT
INTO				

JOIN				
KEY				
LAST	LCASE	LEAST	LEFT	LENGTH
LFILL	LINK	LIST	LN	LOCALSYSDBA
LOCATE	LOG	LOG10	LONG	LONGFILE
LOWER	LPAD	LTRIM		
MAKEDATE	MAKETIME	MAPCHAR	MAX	MBCS
MICROSECOND	MIN	MINUTE	MOD	MONTH
MONTHNAME				
NATURAL	NCHAR	NEXT	NOROUND	NO
NOT	NOW	NULL	NUM	NUMERIC
OBJECT	OF	ON	ORDER	
PACKED	PI	POWER	PREV	PRIMARY
RADIANS	REAL	REFERENCED	REJECT	RELATIVE
REPLACE	RFILL	RIGHT	ROUND	ROWID
ROWNO	RPAD	RTRIM		
SECOND	SELECT	SELUPD	SERIAL	SET
SHOW	SIGN	SIN	SINH	SMALLINT
SOME	SOUNDEX	SPACE	SQRT	STAMP
STATISTICS	STDDEV	SUBDATE	SUBSTR	SUBSTRING
SUBTIME	SUM	SYSDBA		
TABLE	TAN	TANH	TIME	TIMEDIFF
TIMESTAMP	TIMEZONE	TO	TOIDENTIFIER	TRANSACTION
TRANSLATE	TRIM	TRUNC	TRUNCATE	
UCASE	UID	UNICODE	UNION	UPDATE
UPPER	USER	USERGROUP	USING	UTCDIFF
VALUE	VALUES	VARCHAR	VARGRAPHIC	VARIANCE
WEEK	WEEKOFYEAR	WHERE	WITH	
YEAR				
ZONED				

result_column_name

<result_column_name [Extern]> ::=
<identifier [Page 27]>

result_table_name

<result_table_name [Extern]> ::=
<identifier [Page 27]>

revoke_statement

<revoke_statement [Extern]> ::=
  REVOKE <priv_spec [Page 38]>,... FROM <grantee [Page 26]>,... [<cascade_option [Page 14]>]
| REVOKE EXECUTE ON <dbproc_name [Page 19]> FROM <grantee>,...
| REVOKE SELECT ON <sequence_name [Page 46]> FROM <grantee>,...
[<cascade_option>]

role_name

<role_name [Extern]> ::=
  <identifier [Page 27]>

rollback_statement

<rollback_statement [Extern]> ::=
  ROLLBACK [WORK] [KEEP <lock_statement [Page 31]>]

routine

<routine [Extern]> ::=
  [<local_variables [Page 30]>] <statement_list [Page 49]>;

routine_sql_statement

<routine_sql_statement [Extern]> ::=
  <call_statement [Page 14]>
| <close_statement [Page 14]>
| <create_table_temp [Page 18]>
| <declare_cursor_statement [Page 19]>
| <delete_statement [Page 20]>
| <fetch_statement [Page 24]>
| <insert_statement [Page 28]>
| <lock_statement [Page 31]>
| <select_statement [Page 46]>
| <named_select_statement [Page 33]>
| <single_select_statement [Page 47]>
| <select_direct_statement:_searched [Page 45]>
| <select_direct_statement:_positioned [Page 44]>
| <select_ordered_statement:_searched [Page 46]>
| <select_ordered statement:_positioned [Page 45]>
| <subtrans_statement [Page 50]>
| <update_statement [Page 52]>

row_spec

<row_spec [Extern]> ::=
  ROW <table_name [Page 50]> KEY <key_spec [Page 29]>,...
| ROW <table_name> CURRENT OF <result_table_name [Page 42]>

rowno_column

<rowno_column [Extern]> ::=
  ROWNO [<result_column_name [Page 42]>]
| <result_column_name> = ROWNO

rowno_predicate

<rowno_predicate [Extern]> ::=
  ROWNO < <unsigned_integer [Page 52]>
| ROWNO < <parameter_spec [Page 37]>
| ROWNO <= <unsigned_integer [Page 52]>
| ROWNO <= <parameter_spec [Page 37]>

sample_definition

<sample_definition [Extern]> ::=
  SAMPLE <unsigned_integer [Page 52]> ROWS
| SAMPLE <unsigned_integer> PERCENT

search_and_result_spec

<search_and_result_spec [Extern]> ::=
  <search_expression [Page 23]>, <result_expression>

search_condition

<search_condition [Extern]> ::=
  <boolean_term [Page 14]>
| <search_condition> OR <boolean_term>

seconds

<seconds [Extern]> ::=
  <expression [Page 23]>

select_column

<select_column [Extern]> ::=
  <table_columns [Page 50]>
| <derived_column [Page 20]>
| <rowno_column [Page 44]>
| <stamp_column [Page 48]>

select_direct_statement:_positioned

<select_direct_statement:_positioned [Extern]> ::=
  SELECT DIRECT <select_column [Page 44]>,... INTO <parameter_spec [Page 37]>,...
    FROM <table_name [Page 50]> WHERE CURRENT OF <result_table_name [Page 42]>
[<lock_option [Page 30]>]

select_direct_statement:_searched

<select_direct_statement:_searched [Extern]> ::=
  SELECT DIRECT <select_column [Page 44]>,... INTO <parameter_spec [Page 37]>,...
    FROM <table_name [Page 50]> KEY <key_spec [Page 29]>,...[<where_clause [Page 54]>]
[<lock_option [Page 30]>]

select_ordered_format1:_positioned

<select_ordered_format1:_positioned [Extern]> ::=
  SELECT <FIRST | LAST> <select_column [Page 44]>,... INTO <parameter_spec [Page 37]>,...
    FROM <table_name [Page 50]> [INDEX <column_name [Page 15]> | INDEXNAME <index_name [Page 28]>]
    WHERE CURRENT OF <result_table_name [Page 42]> [<lock_option [Page 30]>]
| SELECT <FIRST | LAST> <select_column>,... INTO <parameter_spec>,...
    FROM <table_name> [index_pos_spec [Page 28]]
    WHERE CURRENT OF <result_table_name> [<lock_option>]

select_ordered_format1:_searched

<select_ordered_format1:_searched [Extern]> ::=
  SELECT <FIRST | LAST> <select_column [Page 44]>,... INTO <parameter_spec [Page 37]>,...
    FROM <table_name [Page 50]>[<pos_spec [Page 37]>] [<where_clause [Page 54]>]
[<lock_option [Page 30]>]

select_ordered_format2:_positioned

<select_ordered_format2:_positioned [Extern]>::=
  SELECT <NEXT | PREV> <select_column [Page 44]>,...INTO <parameter_spec [Page 37]>,...
    FROM <table_name [Page 50]> [<index_pos_spec [Page 28]>]
    WHERE CURRENT OF <result_table_name [Page 42]> [<lock_option [Page 30]>]

select_ordered_format2:_searched

<select_ordered_format2:_searched [Extern]> ::=
  SELECT <NEXT | PREV> <select_column [Page 44]>,...INTO <parameter_spec [Page 37]>,...
    FROM <table_name [Page 50]>[<index_pos_spec [Page 28]>]
    KEY <key_spec [Page 29]>,... [<where_clause [Page 54]>] [<lock_option [Page 30]>]

select_ordered_statement:_positioned

<select_ordered_statement:_positioned [Extern]> ::=
  <select_ordered_format1:_positioned [Page 45]>
| <select_ordered_format2:_positioned [Page 45]>

select_ordered_statement:_searched

<select_ordered_statement:_searched [Extern]> ::=
  <select_ordered_format1:_searched [Page 45]>
| <select_ordered_format2:_searched [Page 45]>

select_statement

<select_statement [Extern]> ::=
  <query_expression [Page 39]> [<order_clause [Page 36]>] [<update_clause [Page 52]>]
[<lock_option [Page 30]>]
    [FOR REUSE]

sequence_name

<sequence_name [Extern]> ::=
  <identifier [Page 27]>

set_function_name

<set_function_name [Extern]> ::=
  COUNT
| MAX
| MIN
| SUM
| AVG
| STDDEV
| VARIANCE

set_function_spec

<set_function_spec [Extern]> ::=
  COUNT (*)
| <distinct_function [Page 21]>
| <all_function [Page 12]>

set_insert_clause

<set_insert_clause [Extern]> ::=
  <column_name [Page 15]> = <extended_value_spec [Page 24]>

set_statement

<set_statement [Extern]> ::=
  SET ROLE ALL [EXCEPT <role_name [Page 43]>]
| SET ROLE NONE
| SET ROLE <role_name> [IDENTIFIED BY <password [Page 37]>]
| SET ISOLATION LEVEL <unsigned_integer [Page 52]>

set_update_clause

<set_update_clause [Extern]> ::=
  <column_name [Page 15]> = <extended_expression [Page 24]>
| <column_name>,... = (<extended_expression>,...)
| (<column_name>,...) = (<extended_expression>,...)
| <column_name> = <subquery [Page 49]>
| (<column_name>,...) = <subquery>

sign

<sign [Extern]> ::=
  +
| -

simple_identifier

<simple_identifier [Extern]> ::=
  <first_character [Page 25]>[<identifier_tail_character [Page 27]>...]

single_select_statement

<single_select_statement [Extern]> ::=
  SELECT [<distinct_spec [Page 21]>] <select_column [Page 44]>,... INTO <parameter_spec [Page 37]>,...
    FROM <from_table_spec [Page 25]>,...[<where_clause [Page 54]>] [<group_clause [Page 27]>]
    [<having_clause [Page 27]>] [<lock_option [Page 30]>]

sort_spec

<sort_spec [Extern]> ::=
  <unsigned_integer [Page 52]> [ASC | DESC]
| <expression [Page 23]> [ASC | DESC]

sound_predicate

<sound_predicate [Extern]> ::=
  <expression [Page 23]> [NOT] SOUNDS [LIKE] <expression>

source_user

<source_user [Extern]> ::=
  <user_name [Page 53]>

special_character

<special_character [Extern]> ::=
  every character except
    <digit [Page 21]>
  | <letter [Page 30]>

```
  | <extended_letter [Page 24]>
  | <hex_digit [Page 27]>
  | <language_specific_character [Page 29]>
  | <character for the end of a line in a file>
```

special_function

```
<special_function [Extern]> ::=
  VALUE ( <expression [Page 23]>, <expression>,...)
| GREATEST ( <expression>, <expression>,...)
| LEAST ( <expression>, <expression>,...)
| DECODE ( <check_expression [Page 23]>, <search_and_result_spec [Page 44]>,...[,
<default_expression [Page 23]> ] )
```

special_identifier

```
<special_identifier [Extern]> ::=
  <special_identifier_character [Page 48]>...
```

special_identifier_character

```
<special_identifier_character [Extern]> ::=
  any character.
```

sql_comment

```
<sql_comment [Extern]> ::=
  /*<commend text>*/
```

stamp_column

```
<stamp_column [Extern]> ::=
  STAMP [<result_column_name [Page 42]>]
| <result_column_name> = STAMP
```

statement

```
<statement [Extern]> ::=
  BEGIN <statement_list [Page 49]> END
| BREAK
| CONTINUE
| CONTINUE EXECUTION
| <if_statement [Page 28]>
| <while_statement [Page 54]>
| <assignment_statement [Page 13]>
| STOP (<expression [Page 23]> [,<expression>] )
| TRY <statement_list>; CATCH <statement>
| <routine_sql_statement [Page 43]>
```

statement_list

<statement_list [Extern]> ::=
  <statement [Page 48]>
| <statement_list> ; <statement>

string_function

<string_function [Extern]> ::=
  <string_spec [Page 49]> || <string_spec>
| <string_spec> & <string_spec>
| SUBSTR (<string_spec>, <expression [Page 23]>[, <expression>])
| LFILL (<string_spec>, <string_literal [Page 49]> [,<unsigned_integer [Page 52]>])
| RFILL (<string_spec>, <string_literal> [,<unsigned_integer>])
| LPAD (<string_spec>, <expression>, <string_literal> [,<unsigned_integer>
])
| RPAD (<string_spec>, <expression>, <string_literal> [,<unsigned_integer>
])
| TRIM (<string_spec>[, <string_spec>])
| LTRIM (<string_spec>[, <string_spec>])
| RTRIM (<string_spec>[, <string_spec>])
| EXPAND (<string_spec>, <unsigned_integer>)
| UPPER (<string_spec>)
| LOWER (<string_spec>)
| INITCAP (<string_spec>)
| REPLACE (<string_spec>, <string_spec>[, <string_spec>])
| TRANSLATE (<string_spec>, <string_spec>, <string_spec>)
| MAPCHAR (<string_spec>[, <unsigned_integer>] [, <mapchar_set_name [Page
31]>])
| ALPHA (<string_spec>[, <unsigned_integer>])
| ASCII (<string_spec>)
| EBCDIC (<string_spec>)
| SOUNDEX (<string_spec>)

string_literal

<string_literal [Extern]> ::=
  ''
| '<character [Page 14]>...'
| <hex_literal [Page 27]>

string_spec

<string_spec [Extern]> ::=
  <expression [Page 23]>

subquery

<subquery [Extern]> ::=
  (<query_expression [Page 39]>)

subtrans_statement

<subtrans_statement [Extern]> ::=
  SUBTRANS BEGIN
| SUBTRANS END
| SUBTRANS ROLLBACK

synonym_name

<synonym_name [Extern]> ::=
  <identifier [Page 27]>

table_columns

<table_columns [Extern]> ::=
  *
| <table_name [Page 50]>.*
| <reference_name [Page 39]>.*

table_description_element

<table_description_element [Extern]> ::=
  <column_definition [Page 15]>
| <constraint_definition [Page 16]>
| <referential_constraint_definition [Page 40]>
| <key_definition [Page 29]>
| <unique_definition [Page 52]>

table_expression

<table_expression [Extern]> ::=
  <from_clause [Page 25]> [<where_clause [Page 54]>] [<group_clause [Page 27]>]
[<having_clause [Page 27]>]

table_name

<table_name [Extern]> ::=
  [<owner [Page 36]>.]<identifier [Page 27]>

term

<term [Extern]> ::=
  <factor [Page 24]>
| <term> * <factor>
| <term> / <factor>
| <term> DIV <factor>
| <term> MOD <factor>

termchar_set_name

<termchar_set_name [Extern]> ::=
  <identifier [Page 27]>

time_expression

<time_expression [Extern]> ::=
  <expression [Page 23]>

time_or_timestamp_expression

<time_or_timestamp_expresion [Extern]> ::=
  <expression [Page 23]>

time_function

<time_function [Extern]> ::=
  ADDTIME (<time_or_timestamp_expression [Page 51]>, <time_expression [Page 51]>)
| SUBTIME (<time_or_timestamp_expression>, <time_expression>)
| TIMEDIFF (<time_or_timestamp_expression>, <time_or_timestamp_expression>
)
| MAKETIME (<hours [Page 27]>, <minutes [Page 32]>, <seconds [Page 44]>)

trigger_event

<trigger_event [Extern]> ::
  INSERT
| UPDATE [(<column_list [Page 15]>)]
| DELETE

trigger_name

<trigger_name [Extern]> ::=
  <identifier [Page 27]>

trigonometric_function

<trigonometric_function [Extern]> ::=
  COS (<expression [Page 23]>)
| SIN (<expression>)
| TAN (<expression>)
| COT (<expression>)
| COSH (<expression>)
| SINH (<expression>)
| TANH (<expression>)
| ACOS (<expression>)
| ASIN (<expression>)
| ATAN (<expression>)
| ATAN2 (<expression>, <expression>)
| RADIANS (<expression>)
| DEGREES (<expression>)

underscore

<underscore [Extern]> ::=
  _

unique_definition

<unique_definition [Extern]> ::=
  [CONSTRAINT <index_name [Page 28]>] UNIQUE (<column_name [Page 15]>,...)

unlock_statement

<unlock_statement [Extern]> ::=
  UNLOCK <row_spec [Page 43]>... IN SHARE MODE
| UNLOCK <row_spec>... IN EXCLUSIVE MODE
| UNLOCK <row_spec>... IN SHARE MODE <row_spec>... IN EXCLUSIVE MODE
| UNLOCK <row_spec>... OPTIMISTIC

unsigned_integer

<unsigned_integer [Extern]> ::=
  <numeric_literal [Page 33]>

update_clause

<update_clause [Extern]> ::=
  FOR UPDATE [OF <column_name [Page 15]>,...]

update_statement

<update_statement [Extern]> ::=
  UPDATE [OF] <table_name [Page 50]> [<reference_name [Page 39]>] SET
<set_update_clause [Page 47]>,...
    [KEY <key_spec [Page 29]>,...] [WHERE <search_condition [Page 44]>]
| UPDATE [OF] <table_name> [<reference_name>] (<column_name [Page 15]>,...)
    VALUES (<extended_value_spec [Page 24]>,...) [KEY <key_spec>,...]
    [WHERE <search_condition>]
| UPDATE [OF] <table_name> [<reference_name>] SET <set_update_clause>,...
    WHERE CURRENT OF <result_table_name [Page 42]>
| UPDATE [OF] <table_name> [<reference_name>] (<column_name>,...)
    VALUES (<extended_value_spec>,...) WHERE CURRENT OF <result_table_name>

update_statistics_statement

<update_statistics_statement [Extern]> ::=
  UPDATE STAT[ISTICS] COLUMN <table_name [Page 50]>.<column_name [Page 15]>
    [ESTIMATE [<sample_definition [Page 44]>]]
| UPDATE STAT[ISTICS] COLUMN (<column_name>,...) FOR <table_name>
    [ESTIMATE [<sample_definition>]]
| UPDATE STAT[ISTICS] COLUMN (*) FOR <table_name>
    [ESTIMATE [<sample_definition>]]
| UPDATE STAT[ISTICS] <table_name> [ESTIMATE [<sample_definition>]]

```
| UPDATE STAT[ISTICS] [<owner [Page 36]>.][<identifier [Page 27]>]* [ESTIMATE
[<sample_definition>]]
```

user_mode

```
<user_mode [Extern]> ::=
  DBA
| RESOURCE
| STANDARD
```

user_name

```
<user_name [Extern]> ::=
  <identifier [Page 27]>
```

usergroup_mode

```
<usergroup_mode [Extern]> ::=
  RESOURCE
| STANDARD
```

usergroup_name

```
<usergroup_name [Extern]> ::=
  <identifier [Page 27]>
```

value_spec

```
<value_spec [Extern]> ::=
  <literal [Page 30]>
| <parameter_spec [Page 37]>
| NULL
| USER
| USERGROUP
| LOCALSYSDBA
| SYSDBA [(<user_name [Page 53]>)]
| SYSDBA [(<usergroup_name [Page 53]>)]
| [<owner>.]<sequence_name [Page 46]>.NEXTVAL
| [<owner [Page 36]>.]<sequence_name>.CURRVAL
| DATE
| TIME
| TIMESTAMP
| TIMEZONE
| TRUE
| FALSE
| TRANSACTION
| UTCDIFF
```

variable_name

```
<variable_name [Extern]> ::=
  <identifier [Page 27]>
```

where_clause

<where_clause [Extern]> ::=
  WHERE <search_condition [Page 44]>

while_statement

<while_statement [Extern]> ::=
  WHILE <search_condition [Page 44]> DO <statement [Page 48]>