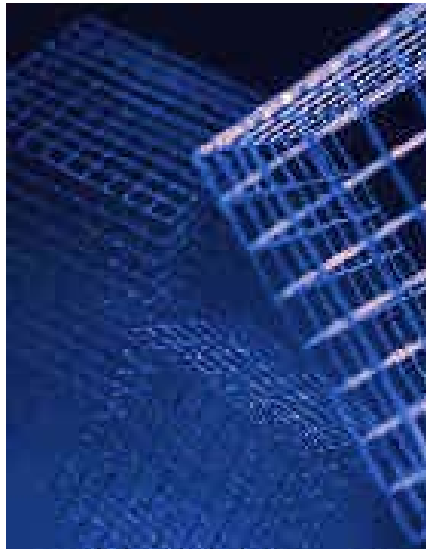# SQL Studio: SAP DB

Version 7.4

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, source code, names of variables and parameters as well as names of installation, upgrade and database tools.
EXAMPLE TEXT	Keys on the keyboard, for example, function keys (such as F2) or the ENTER key.
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.

SQL Studio: SAP DB 7.4

SAP DB is a relational database system with an SQL-compatible user interface.

"Relational" means that SAP DB provides all its information to users in the form of tables. The standard language SQL (Structured Query Language) provides a set of instructions with which you can manage, update, and analyze these tables.

SQL Studio provides easy access to the data held in a SAP DB database instance. As well as its use as a query definition tool, SQL Studio is a comfortable tool, both for application programmers who want to test SQL statements, and also for database designers who can benefit from the graphical support it provides for the creation and modification of database objects.

You can use SQL Studio for the following tasks:

- Creating and managing database tables, indexes, and sequences, and managing stored SQL statements, database users, and database procedures with the Catalog Manager [Page 10]

- Creating and executing SQL statements in the SQL Dialog [Page 23]

- Selecting and editing data records in a screen display with the Form Dialog [Page 26]

- Formulating database queries with the help of visual tools in the Visual Query Dialog [Page 29]

> The SQL Studio as it is described here can be used on Microsoft Windows operating systems only. For other operating system platforms you can use the Web SQL Studio [See SAP DB Library].
>
> You can download the SQL Studio program free of charge from the following Internet address: **www.sapdb.org**.
>
> For general information about the SAP DB database system, see the documentation The SAP DB Database System [See SAP DB Library] at the following Internet address: **www.sapdb.org** → *Documentation*.

Starting SQL Studio

Procedure

To start SQL Studio, choose *Start* → *Programs* → *SAP DB* → *SQL Studio*.

Starting from the command line

You can also start SQL Studio from the command line. If you do launch SQL Studio from the command line, you can also specify options for it.

1. Switch to the directory where the program **sqlsto.exe** is located.

2. Enter the following command: **sqlsto [<options>]**

You can use the following options:

-?	Display all command line options
-version	Display information on software version
-n <server_name>	Name of database server

-d <database_name>	Name of the database instance
-u <user_name[,password]>	User name and password
-c oracle	SQL mode ORACLE. After starting the SQL Studio, you can also change the SQL mode in the user settings [Page 9].
-t <trace_file>	Generate a log file for logging SQL statements

Opening a Database Session

Use

Before you can use SQL Studio to access the data in a database instance, you must establish a connection with the database server and log on to the database. You can enter options for connecting to the database [Page 7].

Prerequisites

You have started SQL Studio and entered the required options for connecting to the database.

Procedure

1. Choose *Session → Connect*.

2. Enter the name of the database server and the database instance.

3. Enter your user name and password, and choose *OK*.

> When you enter the user name and password, the system automatically uses upper case. If you want the system to differentiate between upper and lower case, you must put quotation marks around your user name and password. The quotation marks are also necessary if the user name or password includes special characters. Quotation marks must not be used as part of the user name or password itself.

Result

The system establishes a connection with the database. The current session is entered in the recent sessions list [Page 8].

> You can also open a new database session directly from the recent sessions list.

Options for Connecting to the Database

You can enter the following options for connecting to the database:

- WAN Mode

    If the connection to the database is slow, you can work with reduced functionality in the SQL Studio in WAN mode (Wide Area Network). In WAN mode, only SQL Dialog [Page 23] is available. In addition, you are able to access your SQL Studio user settings

[Page 9]. If you want to work in WAN mode, activate the *WAN Mode* checkbox in the toolbar, and then open the database session.

- NOTIMEOUT

  If an existing database connection is inactive for a long period, the database will usually disconnect automatically. You can, however, change this. Activate the *NOTIMEOUT* checkbox in the toolbar, and then open the database session.

Recent Sessions List

Use

You can open a new database session directly from the recent sessions list.

The list contains up to 10 sessions. Depending on your user settings [Page 9], the password may be stored for these sessions.

Procedure

Choose *Session* and then the required session.

- If the password was stored for the selected session, the system connects directly to the database.

- If the password was not stored for the selected session, you must enter the password. The system then connects to the database.

    You can delete the list of most recent SQL Studio sessions. To do this, choose *Session → Clear Recent Sessions*.

Logging Off from the Database

To end a current database connection, choose *Session → Disconnect*.

    You may want to log off if, for example, you are only authorized to connect to the database once and you want to log on to it from another SAP DB component without ending the SQL Studio program.

    If you want to re-logon, or log on with a different user or options, you do not need to log off first. The system automatically closes the existing connection to the database as soon as you log on again with *Session → Connect* or via the recent sessions list [Page 8].

⬇ User Settings

Use

You can personalize the settings in SQL Studio during operation. These settings are stored when you exit SQL Studio.

Procedure

To change your settings, choose *View → Settings*.

You can now make your changes.

General

Store Password	The system stores the password you used at logon for the next logon
Confirmation for saving SQL Studio Objects	Prompt for deciding whether a newly created SQL Studio object [Page 11] should be saved when you close the dialog window
Form Dialog read only	Form dialogs [Page 26] are opened in read-only mode
Remove failed connection attempts from Recent Sessions list	The system deletes the failed attempts from the recent sessions list [Page 8]
Identifiers in Create Dialogs upper case	When you create a new SQL Studio object, the system automatically converts the entries to upper case

Result window

Limit for long columns (Bytes)	The number of bytes that should be loaded from the database for a LONG column
Representation of null value	Representation of null value
Clipped result view (Internal Mode)	Result set displayed in segments
Replace non chars in long columns	ASCII-Codes < 32 are replaced by a space when LONG columns are displayed
Copy columns tab separated to clipboard	When results are temporarily stored on the clipboard, the system separates the columns with tabs
Copy Result with Column Header	When the results are copied, the system also copies the column headers

Catalog Manager

Selected table types	Display of table types in the Catalog Manager [Page 10]
Path for local folder	Path to be used to save SQL Studio Objects in a local folder
Restore catalog state	The most recent view of the Catalog Manager is restored when you log back on to the database
Convert input for catalog filter to uppercase	The system automatically converts filter entries

	in the Catalog Manager to upper case

Query Dialog

Isolation Level	Isolation level for the creation of SQL statements*
SQL mode	SQL mode for the creation of SQL statements in the SQL dialog. The SQL mode INTERNAL is always used for the Form dialog and the Visual Query dialog.*

> If you have the user attribute EXCLUSIVE, you cannot change the standard settings for the isolation level and SQL mode*. In this case, SQL Studio automatically works with the isolation level COMMITTED and in SQL mode INTERNAL.

*For an explanation of the terms "isolation level" and "SQL mode," see the isolation level and SQL mode sections of the documentation *The SAP DB Database System*.

For an explanation of the user attributes, see the authorization section of the *Reference Manual: SAP DB.*

Catalog Manager

The Catalog Manager is displayed in the left-hand area of the SQL Studio window. It displays all directories and database objects which you are authorized at least to read:

SQL Studio Objects [Page 11]	Stored SQL statements and draft database tables
Tables [Page 11]	Database and system tables, view tables and synonyms arranged according to owner
Indexes [Page 19]	Indexes that have been created for tables, arranged according to table and owner
Number sequences [Page 20]	Generated number sequences, arranged according to owner
Favorites [Page 22]	Database tables selected by the user
User [Page 22]	All users for which the user logged onto the database has owner rights
Database Procedures [Page 22]	Database procedures that the user created in the database

> If you want the Catalog Manager to display only certain tables, indexes, sequences and database procedures, you can set a filter for the object names. Enter the first few letters of the name that you want to use as a filter, and choose *Refresh Catalog View*.
>
> The filter does not refer to your SQL Studio objects [Page 11]

SQL Studio Objects

You can store SQL statements and drafts of database tables as SQL Studio objects in the database locally in the *Local Folder* subdirectory. This means that you can use the objects at a later date.

Procedure

- To create a new folder for SQL Studio objects in the database using the Catalog Manager [Page 10], choose *Catalog Manager → New → Folder.*

- To create SQL statements and store them as SQL Studio objects, use the SQL dialog [Page 23], the Form dialog [Page 26] or the Visual Query dialog [Page 29].

- To store drafts of database tables as SQL Studio objects, create the table definition [Page 11] with the Catalog Manager.

- To edit a stored SQL Studio object, select the object and choose *Catalog Manager → Show*.

> You can enter the path for the *Local Folder* in the user profile settings [Page 9].

Tables

Under *Tables*, the Catalog Manager [Page 10] displays the database tables, view tables and synonyms that you have access to in accordance with your user settings [Page 9]. The entries are arranged by owner.

You can create and edit database tables. You can create, rename, and delete view tables and synonyms.

- Creating a database table [Page 11]

- Creating a view table [Page 15]

- Creating a synonym [Page 16]

- Displaying the definition of a table [Page 16]

- Changing the definition of a database table [Page 17]

- Displaying the content of a table [Page 17]

- Renaming a table [Page 18]

- Deleting all rows of a table [Page 18]

- Deleting a table [Page 18]

Creating a Database Table

Use

You can use SQL Studio to create new database tables in the database that you are logged on to. When you do so, you can use existing database tables or stored SQL Studio objects [Page 11] as a template for new database tables.

Prerequisites

You have the necessary user authorizations and have user attribute NOT EXCLUSIVE*.

Procedure

1. Choose *Catalog Manager* → *New* → *Table*
   The system opens a window for table definition.

2. To use an existing database table or stored SQL Studio object as a template for your new database table, select the required object in the Catalog Manager [Page 10] and copy it using the Drag&Drop function to the table definition window.

3. Enter a table name.

4. Carry out the following steps:

   - Defining Columns [Page 12]

   - Defining Constraints [Page 13]

   - Defining Foreign Key Dependencies (Referential Integrity) [Page 14]

   - Defining Miscellaneous Information [Page 14]

5. To use or edit your table draft again later, save it as an SQL Studio object [Page 11] by choosing *Table Definition* → *Save As*.

6. Choose *Table Definition* → *Create Table*. The system creates the new table in the database.

   To export the SQL statement for creating the database table to the SQL dialog, choose *Table Definition* → *Export to SQL Dialog*.

*For an explanation of user authorizations and user attributes, see the User Concept section of the documentation *The SAP DB Database System* and the Authorization section of the *Reference Manual: SAP DB*.

For information on the syntax of CREATE TABLE statements, see the CREATE TABLE Statement section of the *Reference Manual: SAP DB*.

Defining Columns

Procedure

1. Enter the name of a *Column*, and confirm it with `Enter`.

2. Select the required data type.

3. Depending on the data type, you may be able to define further properties.

   - Dimension *(Dim)*

   - Code type *(Code)*

   - Column is key column

   - Column values cannot be null values *(Not Null)*

   - Default value for column value *(Default)*

   - Uniqueness of column values *(Unique)*

4. To insert a new column, choose *New Column*. The new column is added to the end of the table.

5. To insert a new column and at the same time copy the definition of existing columns in the same table, select the required columns, and choose *Copy Column*. The new column is added to the end of the table.

6. To insert new columns and copy the definition of existing columns from existing tables, choose *Import Column*. A window opens, containing all columns defined by the current user. Select one or more columns and choose *OK*. The new column is added to the end of the table.

7. In order to remove a column from the table, select the column and choose *Remove Column*.

You can change the columns sequence by selecting one or more columns and moving them upwards or downwards using the arrows ⇑ ⇓.

Defining Constraints

Use

A constraint for the values of a column is composed of one or more conditions that you formulate line-by-line and can link together.

You can only formulate constraints for columns with valid column definitions.

Procedure

1. If required, enter the name for the constraint.

2. Select the column that you want to formulate the condition for.

3. Select a predicate for the condition. To negate the condition, use the Not-Operator `!`. Negation is not possible with relational operators.

4. Enter the relational *expression* for the condition, and confirm it with `Enter`.
   When you enter the relational expression, you can choose between the following options:

`Option`	**Meaning**
Single Value	The expression consists of a single value
All	The condition must be fulfilled with all expressions in the list (*Expression List*)
Any	The condition must be fulfilled with one expression in the list (*Expression List*)
Default	The expression consists of the default value of the column

5. Enter how the formulated condition is to be linked with the next condition.

If you retrospectively reset the relation type back to `none`, all subsequently formulated conditions are deleted immediately.

6. To insert a new constraint, choose *New Constraint*.

7. To insert new constraints and at the same time copy the definition of existing constraints in the same table, select the required constraints, and choose *Copy Constraint*.

8. To insert new constraints and copy the definition of existing constraints from existing tables, choose *Import Constraint*. A window opens, containing all constraints defined by the current user. Select one or more constraints and choose *OK*.

9. In order to delete a constraint, select the constraint and choose *Remove Constraint*.

Defining Foreign Key Dependencies

Use

Foreign key dependencies (*Referential Integrity*) describe the dependencies between data of two database tables. Under *Ref. Integrity* you can define links between columns in your database table and columns in other tables.

Procedure

1. If required, enter the name for the foreign key.

2. Select the referencing column.

3. Use the Drag&Drop function to select the referenced database table from the Catalog Manager [Page 10] and then select the column that you want to link to.

4. Select how the referenced table is to behave if a data record in the referencing table is deleted (DELETE rule).

5. To add a new link, choose *New Foreign Key*.

6. To insert new links and at the same time copy the definition of existing links of the same table, select the required links, and choose *Copy Foreign Key*.

7. To insert new links and copy the definition of existing links from existing tables, choose *Import Foreign Key*. A window opens, containing all links defined by the current user. Select one or more links and choose *OK*.

8. To delete a link, select it and choose *Remove Foreign Key*.

> For information on the syntax of referential CONSTRAINT definitions, see the referential CONSTRAINT definition section of the *Reference Manual: SAP DB*.

Defining Miscellaneous Information

Under *Misc* you can enter the following additional information for your table.

Entry	Meaning
Comment	Comment
Duplicates	You can use the DUPLICATES clause to control behavior if key collisions occur.
Statistics	*Sample Value* specifies how large the portion of data is that is included for optimization of the database strategy.
Temporary Table *Ignore Rollback*	The table is a temporary table and is saved locally under *Temp*. For temporary tables, you can specify the option *Ignore Rollback*.
Identifiers Upper Case	Automatic conversion of table names, column headers and

	other names into upper case.
	⚠️
	A change to this setting affects the entire table definition immediately.
	If you use a database table as a template for the creation of another database table, the user setting is copied from the template.

💡

For information on the syntax of CREATE TABLE statements, see the CREATE TABLE-Statement section of the *Reference Manual: SAP DB*.

Creating a View Table

Use

You can use SQL Studio to create view tables.

Prerequisites

The database query that you want to base the view table on has been stored as an SQL Studio object [Page 11]. You have the necessary user authorizations and have user attribute NOT EXCLUSIVE*.

Procedure

7. Choose *Catalog Manager→ New → View*.
    A window for defining the view table is opened.

8. Use the Drag&Drop function to copy the stored database query from the Catalog Manager [Page 10] to the definition window. By doing this, you copy the structure of the results of this database query.

9. Enter a name for the view table.

10. If you want to rename the columns of your view table, enter the new column names in *Alias in View*.

11. Select the required options:

Replace existing view	Replace the existing view table
Check on insert or update	Check the view conditions when changing values
Identifiers upper case	Automatic conversion of table names and column headers into upper case.

12. Choose *View Definition → Create View*.

💡

To export the SQL statement for creating the view table to the SQL dialog, choose *View Definition → Export to SQL Dialog*.

*For an explanation of user authorizations and user attributes, see the User Concept section of the documentation *The SAP DB Database System* and the Authorization section of the *Reference Manual: SAP DB*.

For information on the syntax of CREATE VIEW statements, see the CREATE VIEW Statement section of the *Reference Manual: SAP DB*.

Creating a Synonym

Use

You can use SQL Studio to create synonyms for database tables.

Prerequisites

You have the necessary user authorizations and have user attribute NOT EXCLUSIVE*.

Procedure

1. In the Catalog Manager [Page 10] select the database table that you want to create a synonym for, and choose *Catalog Manager → New → Synonym.*
A window for defining the synonym is opened.

2. Enter a synonym name, and select whether the synonym is to be private or PUBLIC.

3. Choose *Synonym Definition → Create Synonym.*

> To export the SQL statement for creating the synonym to the SQL dialog, choose *Synonym Definition → Export to SQL Dialog.*

*For an explanation of user authorizations and user attributes, see the User Concept section of the documentation *The SAP DB Database System* and the Authorization section of the *Reference Manual: SAP DB*.

For information on the syntax of CREATE SYNONYM statements, see the CREATE SYNONYM Statement section of the *Reference Manual: SAP DB*.

Displaying the Definition of a Table

Use

You can use SQL Studio to display the definition of a database table, view table, or synonym.

Prerequisites

You have the required user authorizations.*

Procedure

1. In the Catalog Manager [Page 10], select the table that you want to display the definition of.

2. Choose *Catalog Manager → Show Definition.*

*For an explanation of user authorizations, see the User Concept section of the *User Manual: SAP DB.*

Changing the Definition of a Database Table

Use

You can use SQL Studio to change the definition of a database table.

Prerequisites

You have the necessary user authorizations and have user attribute NOT EXCLUSIVE*.

Procedure

1. Select the table and choose *Catalog Manager* → *Alter Table*.
   The system opens a window for table definition.

2. Make the required changes:

   - Defining Columns [Page 12]

   - Defining Constraints [Page 13]

   - Defining Foreign Key Dependencies (Referential Integrity) [Page 14]

   - Defining Miscellaneous Information [Page 14]

13. Choose *Table Definition* → *Alter Table*.

    To export the SQL statement for changing the database table to the SQL dialog,
    choose *Table Definition* → *Export to SQL Dialog*.

*For an explanation of user authorizations and user attributes, see the User Concept section
of the documentation *The SAP DB Database System* and the Authorization section of the
Reference Manual: SAP DB.

For information on the syntax of ALTER TABLE statements, see the ALTER TABLE
Statement section of the *Reference Manual: SAP DB*.

Displaying the Contents of a Table

Use

You can use SQL Studio to display the contents of a table.

Prerequisites

You have the required user authorizations.*

Procedure

1. In the Catalog Manager [Page 10], select the table that you want to display the contents
   of.

2. Choose *Catalog Manager* → *Show Content.*

*For an explanation of user authorizations, see the User Concept section of the
documentation *The SAP DB Database System*.

Renaming a Table

Use

You can use SQL Studio to rename tables.

Prerequisites

You have the required user authorizations.*

Procedure

1. In the Catalog Manager [Page 10], select the table that you want to rename.

2. Choose *Catalog Manager* → *Rename* and enter the new name.

*For an explanation of user authorizations, see the User Concept section of the documentation *The SAP DB Database System*.

Deleting all Rows of a Table

Use

You can use SQL Studio to delete all rows of a table.

Prerequisites

You have the required user authorizations.*

Procedure

3. In the Catalog Manager [Page 10], select the table for which you want to delete the rows.

4. Choose *Catalog Manager* → *Delete All Rows*

> ⚠
>
> If you delete the rows of a synonym, you thereby delete the rows of the original database table.

*For an explanation of user authorizations, see the User Concept section of the documentation *The SAP DB Database System*.

Deleting a Table

Use

You can use SQL Studio to delete a table from the database.

Prerequisites

You have the required user authorizations.*

Procedure

5. In the Catalog Manager [Page 10], select the table that you want to delete from the database.

6. Choose *Catalog Manager → Drop*.

*For an explanation of user authorizations, see the User Concept section of the documentation *The SAP DB Database System*.

Indexes

Under *Indexes*, the Catalog Manager [Page 10] displays all the tables that indexes have been created for. The following options are available:

* Creating an index [Page 19]

* Displaying the definition of an index [Page 20]

* Deleting an index [Page 20]

Creating an Index

Use

You can use SQL Studio to create new indexes for database tables.

Prerequisites

You have the necessary user authorizations and have user attribute NOT EXCLUSIVE*.

Procedure

14. In the Catalog Manager [Page 10] select the database table that you want to create an index, and choose *Catalog Manager → New → Index.*

15. Enter a name for the index.

16. In the *In Index* field, choose `Yes` for the columns that you want to index values for.

17. To sort the index values in ascending or descending order, select the option `ASC` or `DESC` in the *Sort* field.

18. To change the sequence of the table columns, select a table column and use the ⇑ ⇓, arrows to move it up or down.

19. Select the required options:

Unique	Ensures the uniqueness of the indexed columns
Index name upper case	Automatic conversion of table names and column headers into upper case.

20. Choose *Table Definition → Create Index*.

> To export the SQL statement for creating the index to the SQL dialog, choose *Index Definition → Export to SQL Dialog*.

*For an explanation of user authorizations and user attributes, see the User Concept section of the documentation *The SAP DB Database System* and the Authorization section of the *Reference Manual: SAP DB*.

For information on the syntax of CREATE INDEX statements, see the CREATE INDEX Statement section of the *Reference Manual: SAP DB*.

Displaying the Definition of an Index

Use

You can use SQL Studio to display the definition of an index.

Prerequisites

You have the required user authorizations.*

Procedure

1. In the Catalog Manager [Page 10], select the index that you want to display the definition of.

2. Choose *Catalog Manager → Show Index Definition.*

*For an explanation of user authorizations, see the User Concept section of the documentation *The SAP DB Database System*.

Deleting an Index

Use

You can use SQL Studio to delete the index of a database table.

Prerequisites

You have the required user authorizations.*

Procedure

3. In the Catalog Manager [Page 10], select the index that you want to delete.

4. Choose *Catalog Manager → Drop Index*.

*For an explanation of user authorizations, see the User Concept section of the documentation *The SAP DB Database System*.

Number Sequences

Under *Sequences* , the Catalog Manager [Page 10] displays all the sequences that were created in the database. The following options are available:

*   Creating a sequence [Page 21]

*   Displaying the definition of a sequence [Page 21]

Creating a Sequence

Use

You can use SQL Studio to create new sequences in the database.

Prerequisites

You have the necessary user authorizations and have user attribute NOT EXCLUSIVE*.

Procedure

21. Choose *Catalog Manager→ New → Sequence*.

22. Enter a name for the sequence, and define the required values.

23. Choose *Sequence Definition → Create Sequence*.

> To export the SQL statement for creating the sequence to the SQL dialog, choose *Sequence Definition → Export to SQL Dialog*.

*For an explanation of user authorizations and user attributes, see the User Concept section of the documentation *The SAP DB Database System* and the Authorization section of the *Reference Manual: SAP DB*.

For information on the syntax of CREATE SEQUENCE statements, see the CREATE SEQUENCE Statement section of the *Reference Manual: SAP DB*.

Displaying the Definition of a Sequence

Use

You can use SQL Studio to display the definition of a sequence and the most recently generated value of this sequence.

Prerequisites

You have the required user authorizations.*

Procedure

5. In the Catalog Manager [Page 10], select the sequence that you want to display the definition of.

6. Choose *Catalog Manager → Show Sequence Definition.*

*For an explanation of user authorizations, see the User Concept section of the documentation *The SAP DB Database System*.

Deleting a Sequence

Use

You can use SQL Studio to delete sequences from the database.

Prerequisites

You have the required user authorizations.*

Procedure

7. In the Catalog Manager [Page 10], select the sequence that you want to delete.

8. Choose *Catalog Manager → Drop Sequence*.

*For an explanation of user authorizations, see the User Concept section of the documentation *The SAP DB Database System*.

Favorites

So that you can access database objects quickly and easily, you can store them in the *Favorites* folder in the Catalog Manager [Page 10].

*   To store a database object in the *Favorites* folder, select the required database object and choose *Catalog Manager → Add to Favorites*.

*   To remove a database object from the *Favorites* folder, select the required database object and choose *Catalog Manager → Remove Favorite*.

*   To remove all database objects from the *Favorites* folder, select the Favorites folder and choose *Catalog Manager → Clear Favorites*.

User

Under *Owned Users*, the Catalog Manager [Page 10] displays the users for which you have owner rights. With SQL Studio, you can rename and delete the users.

Prerequisites

You have the required user authorizations.*

Procedure

*   To rename a user, select it and choose *Catalog Manager → Rename User*.

*   To delee a user, select it and choose *Catalog Manager → Drop User*.

*For an explanation of user authorizations, see the User Concept section of the documentation *The SAP DB Database System*.

Database Procedures

Under *Procedures*, the Catalog Manager [Page 10] displays all the database procedures that were created in the database. You can use SQL Studio to display the definitions of these database procedures, and to delete the database procedures.

Prerequisites

You have the required user authorizations.*

Procedure

- To display a database procedure, choose *Catalog Manager → Show dbproc Definition*.

- To delete a database procedure, select it and choose *Catalog Manager → Drop dbproc*.

*For an explanation of user authorizations and user attributes, see the User Concept section of the documentation *The SAP DB Database System*.

For information on the syntax of CREATE DBPROC statements, see the CREATE DBPROC Statement section of the *Reference Manual: SAP DB*.

SQL Dialog

If you want to create SQL statements directly in SQL, you use the SQL dialog.

The following options are available in the SQL dialog:

- Creating SQL statements [Page 23]

  - Setting parameters for SQL statements [Page 24]

  - Importing and exporting SQL statements [Page 25]

  - Executing SQL statements [Page 25]

    For information on the syntax and semantics of the SQL statements of the SAP DB database system, see the Reference Manual: SAP DB [See SAP DB Library].

Creating SQL Statements

Use

In the SQL dialog [Page 23], you can create and save SQL statements in a number of different modes.

Procedure

24. In the user settings [Page 9], select the required SQL mode and isolation level*.

25. Select the required commit mode.

    If you have the user attribute EXCLUSIVE*, you can only select the mode Auto Commit: ON.

  − Choose *View → SQL Dialog* for the mode Auto Commit: ON

  − Choose *View → SQL Dialog Auto Commit Off* for the mode Auto Commit: OFF.

    The system opens a window for the SQL dialog.

26. Enter your SQL statements.

> You can add SQL statements that were already executed during the current database session. Choose *SQL Dialog* → *Recent Statements.* Select the required statement, and choose *Get.*

27. To comment out a row, use // or -- at the start of the row.

28. To separate several SQL statements from one another, enter a commented-out separator line.

29. To scroll through the statement history of the database session, choose *SQL Dialog* → *Previous Statement* or *Direct SQL* → *Next Statement*

30. You can set parameters [Page 24] for SQL statements.

31. To use or edit your statements again later, save them as SQL Studio objects [Page 11] by choosing *SQL Dialog* → *Save As*.

> The keyword list [Page 24] supports you in creating SQL statements.

*For an explanation of the terms "isolation level" and "SQL mode," see the isolation level and SQL mode sections of the documentation *The SAP DB Database System*.

For an explanation of the user attributes, see the authorization section of the *Reference Manual: SAP DB.*

Keyword List

Use

In the SQL dialog [Page 23], the *Keyword List* supports you in creating SQL statements [Page 23].

Procedure

1. To call up the keyword list, use the key combination Ctrl + Space.

2. To add your own keywords to the list, select the required word in your SQL statement and choose *SQL Dialog* → *Add to Keyword List*.

3. To remove your own keywords from the list, select the required word in your SQL statement and choose *SQL Dialog* → *Remove from Keyword List*.

Setting Parameters for SQL Statements

Use

In the SQL dialog [Page 23], you can set parameters for SQL statements. When you execute the SQL statement for which a parameter has been set, a dialog window opens in which you must enter a value for the parameter.

Procedure

1. When you create an SQL statement [Page 23], insert square brackets in all the places you want a variable entry to be possible.

2. If you want to formulate a prompt for the dialog window, enter this prompt within the square brackets.

Table `Article` with *Article No.* and *Unit Price* Columns

If you want to set parameters for the columns `Article No.` and `Unit Price`, you can set the following parameters among the selection criteria:

```
SELECT  "Article No.", "Unit Price" FROM "Article"
WHERE  "Article No." > [article number (from)]
AND  "Article No." < [article number (to)]
AND  "Unit Price" <= [upper price limit]
```

By setting parameters you can also replace entire sections of an SQL statement.

You can formulate a SELECT statement and add a WHERE condition using a parameter:

```
SELECT * FROM USERS
[Your WHERE condition]
```

If you specify a comparison value for the data type CHAR, VARCHAR, DATE or TIME, you must enclose the comparison value in single quotation marks.

Importing and Exporting SQL Statements

Use

In the SQL dialog [Page 23], you can import and export SQL statements as ASCII format text files.

Procedure

Choose *Import File* or *Export File* in the context menu of the SQL dialog.

Executing SQL Statements

Use

In the SQL dialog [Page 23], you can execute new or saved SQL statements.

Procedure

1. To execute new SQL statements, choose *SQL Dialog → Execute*.

2. To execute saved SQL statements, open them in the Catalog Manager [Page 10] and choose *SQL Dialog → Execute.*

If you only want to execute some of the displayed SQL statements, select the section that you want to execute and choose *SQL Dialog→ Execute.*

Result

The status line of the statement window tells you whether execution of your SQL statements was successful, and how long execution took.

If your SQL statement returns a result table [Page 33], this is displayed in a separate window.

Form Dialog

You use the *Form dialog* if you want to display, select, and edit data records from tables in a screen display*.*

The following options are available in the *Form dialog*:

- Executing a Form dialog [Page 26]

  - Selecting data records using search conditions [Page 27]

  - Changing data records [Page 27]

  - Inserting data records [Page 28]

  - Deleting a data record [Page 28]

  - Importing and exporting LONG columns [Page 29]

> If you want to create statements directly in SQL or want to use database options other than the editing of data records, use the SQL dialog [Page 23].

Executing a Form Dialog

Use

You can use the Form dialog [Page 26] to execute statements to edit data records at different isolation levels. You can call the dialog in read-only mode or change mode.

Procedure

1. In the user settings [Page 9], select the required dialog mode and isolation level.

2. Choose *View → Form Dialog*. The system opens a window for the Form dialog.

3. In the Catalog Manager [Page 10], select the table that you want to edit, and use the Drag&Drop function to copy it to the Form dialog window.
   The first data record is displayed in the left half of the window. You can use the arrows < > to scroll through the data records. In change mode, you can change, insert, or delete data records [Page 26]. In the right half of the window, you can enter search conditions for selecting specific records [Page 27].

> To hide the window area for entering the search conditions, deselect the *Filter* flag.

4. To view the data records as a list, choose *Report*. To switch back to the screen display, choose *Record*.

5. To use or edit the dialog again later, save it as an SQL Studio object [Page 11] by choosing *Form Dialog → Save As*.

> To export the SQL statement of your Form dialog to the SQL dialog, choose *Dialog → Export to SQL Dialog*.

Selecting Data Records Using Search Conditions

Use

To display only certain data records of a table, you can enter search conditions in the Form dialog [Page 26].

Procedure

1. To display the window area for entering the search conditions, select the *Filter* flag.

2. Formulate your search conditions for the appropriate table columns. Select the required predicate, and enter comparison values or relational expressions.

3. Enter how the formulated search condition is to be linked with the next search condition.

4. Choose *Refresh*. SQL Studio downloads the data records from the database.

> For information on the syntax of predicates, see the predicate section of the Reference Manual: *SAP DB*.

Changing Data Records

Use

You can use the Form dialog [Page 26] to edit and change data records in a screen display.

Prerequisites

- You have selected change mode for executing the Form dialog [Page 26].

- You have the required user authorizations.*

Procedure

1. In the screen display, scroll to the data record that you want to change.

2. Enter your changes.

> The names of key columns are emboldened.
>
> You can import and export [Page 29] the contents of LONG columns.

3. Confirm with *Update.* SQL Studio transfers the changes to the database.

*For an explanation of user authorizations, see the User Concept section of the documentation *The SAP DB Database System*.

Inserting Data Records

Use

You can use the Form dialog [Page 26] to insert new data records in tables in a screen display.

Prerequisites

- You have selected change mode for executing the Form dialog [Page 26].

- You have the required user authorizations.*

Procedure

32. Choose *Form Dialog → New*. An empty input form opens.

33. Enter your data.

> The names of key columns are emboldened.
>
> You can import and export [Page 29] the contents of LONG columns.

34. Choose *Insert*. SQL Studio stores the new data record in the table.
    Another input form opens. You can enter further data directly and insert this as data records.

35. If you do not want to insert any more data records, deselect *Form Dialog → New.*

36. To view the new data records in a list display, choose *Refresh* and then *Report*.

> When you insert data records, you can use an existing data record from the same table as a template. Scroll to this data record, enter your changes, and choose *Insert*. The data record is inserted in the table as a new data record.

*For an explanation of user authorizations, see the User Concept section of the documentation *The SAP DB Database System*.

Deleting a Data Record

Use

You can use the Form dialog [Page 26] to delete data records.

Prerequisites

- You have selected change mode for executing the Form dialog [Page 26].

- You have the required user authorizations.*

Procedure

1. In the screen display, scroll to the data record that you want to delete.

2. Choose *Delete*.

⚠️

> SQL Studio deletes the data record from the database immediately.

*For an explanation of user authorizations, see the User Concept section of the documentation *The SAP DB Database System*.

Importing and Exporting LONG Columns

Use

You can use the Form dialog [Page 26] to import the contents of LONG columns from a file or the clipboard, and export them to a file or the clipboard.

Procedure

1. To import the contents of a LONG column from a file, click on the input field of this column in the screen display, and choose *Query By Example* → *Import Long* → *Import from File.*

2. To import the contents of a LONG column from the clipboard, click on the input field of this column in the screen display, and choose *Query By Example* → *Import Long* → *Import Text from Clipboard.*

3. To export the contents of a LONG column to a file, click on the input field of this column in the screen display, and choose *Query By Example* → *Export Long* → *Export to File.*

4. To export the contents of a LONG column to the clipboard, click on the input field of this column in the screen display, and choose *Query By Example* → *Export Long* → *Export to Clipboard as Text.*

Visual Query Dialog

If you want the system to provide you with visual support when you formulate database queries, you can use the Visual Query dialog.

The following options are available in the Visual Query dialog:

- Creating a visual query [Page 30]

- Linking table columns with JOINS [Page 31]

- Entering search conditions [Page 31]

- Setting parameters for search conditions [Page 32]

- Defining a result view [Page 32]

- Executing a visual query [Page 33]

💡

> If you want to create statements directly in SQL or want to use other database options in addition to database queries, use the SQL dialog [Page 23].

Creating a Visual Query

Use

In the Visual Query dialog [Page 29], you can create and save SQL statements in a number of different isolation levels.

Procedure

1. In the user settings [Page 9], select the isolation level of your SQL statements.

2. Choose *View → Visual Query.* The system opens a window for the Visual Query dialog. The window consists of the following areas:

- The top half of the window is the area for selecting tables.

- The bottom half of the window is the area for defining the result.

3. In the Catalog Manager [Page 10], select the tables that you want to work with, and use the Drag&Drop function to copy them to the area of the window for selecting tables. For each of the tables copied, the system opens a window containing the names of the table columns.

    You can copy up to 16 tables to the area for selecting tables. To rearrange the tables, choose *Visual Query → Arrange Tables* or *Visual Query → Cascade Tables*. To remove a table from the table selection, close the relevant window.

4. Select the names of the table columns that your database query relates to, and use the Drag&Drop function to copy them to the area for defining the result.

    By double clicking on *, you copy all table columns of a table into the area for defining the result. To remove a table column from the result definition, select the column and choose *Delete Column* in the context menu.

5. You can link table columns with JOINS [Page 31], enter search conditions [Page 31] for the data records, and define the result view [Page 32].

6. To use or edit your Visual Query again later, save it as an SQL Studio object [Page 11] by choosing *Visual Query → Save As*.

    To export the SQL statement of your Visual Query dialog to the SQL dialog, choose *Visual Query → Export to SQL Dialog*.

Linking Table Columns with JOINS

Use

You can use the Visual Query dialog [Page 29] to link table columns with JOINS* in database queries.

Prerequisites

When you created the Visual Query [Page 30], you copied the tables containing the columns you want to link together to the area for selecting tables.

Procedure

1. In the table selection, select the table column that you want to link, and choose the Drag&Drop function to link it to the relevant column in the other table. The system displays a connecting line between the two table columns.

2. To specify the JOIN in more detail, select it, and choose *Show Join Definition* in the context menu. The system opens a window for the JOIN definition. Select the JOIN type and relational operator, and choose *OK*.

3. To delete a JOIN, select it and choose *Delete Join* in the context menu.

> If you copy the same table to the table selection twice, SQL Studio assigns an alias name. In this way, you can create SELF JOINS.

For information on the syntax of JOINS, see the JOIN predicate section of the *Reference Manual: SAP DB*.

Entering Search Conditions

Use

In the Visual Query dialog [Page 29], you can enter search conditions when you formulate your database query.

Prerequisites

When you created the Visual Query [Page 30], you copied the table columns that your database query relates to into the area for defining the result.

Procedure

1. Enter your search condition in the *Criteria* field of the relevant table column, and confirm with Enter.
   You can set parameters for the search condition [Page 32].

> If you specify a search condition for a column with the data type CHAR, VARCHAR, DATE or TIME, you must put the relational expression between single quotation marks.

2. You can formulate several search conditions with AND links or OR links. If you want to use one column several times to formulate search conditions, but only want to display it once, you can hide it in the result view [Page 32].

- To formulate several search conditions with AND links, enter these conditions in the same row.

- To formulate several search conditions with OR links, enter each of these conditions in a new row.

> For information on the syntax of search conditions and predicates, see the search condition and predicate sections of the *Reference Manual: SAP DB*.

Setting Parameters for Search Conditions

Use

In the Visual Query dialog [Page 29], you can set parameters for search conditions for database queries. When you execute the database query a dialog window then opens in which you must enter a value for the parameter.

Procedure

1. When you create a search condition [Page 31], insert square brackets in all the places you want a variable entry to be possible.

2. If you want to formulate a prompt for the dialog window, enter this prompt within the square brackets.

> You can set parameters for the search condition for the `Order_No` column of table `Purchase orders` as follows:
>
> `=[order number:]`

Defining the Result View

Use

In the Visual Query dialog [Page 29], you can specify how SQL Studio displays the result of your database query.

Prerequisites

When you created the Visual Query [Page 30], you copied the table columns that your database query relates to into the area for defining the result.

Procedure

1. To assign a synonym for a column name, enter the required synonym name in the field *Synonym*, and confirm with `Enter`.

2. To hide a column in the result view, set the entry to *No* by double clicking on the field *Visible*.

> This is particularly useful if you only need the column in order to formulate search conditions [Page 31].

3. To group the result by column values, set the entry in the field *Group* by double clicking on *Yes* in the column that you want to use for grouping.

> You can use this grouping feature to define average values, maximum values, minimum values, totals, and the number of found data records in the result view.

4. To sort the data records in ascending or descending order, in the field *Sort* select *Ascending* or *Descending* in the column that you want to use for sorting, and confirm with `Enter`.

Executing a Visual Query

Use

In the Visual Query dialog [Page 29], you can execute new database queries or saved Visual Queries.

Procedure

1. To execute a new database query, choose *Visual Query → Execute*.

2. To execute a saved Visual Query, open it in the Catalog Manager [Page 10] and choose *Visual Query → Execute.*

Result

The status line of the statement window tells you whether execution of your database query was successful, and how long execution took.

If your database query returns a result table [Page 33], this is displayed in a separate window.

Result Tables

SQL Studio displays the results of each database query in a separate area of the window. You can use the navigation functions in the context menu of a result to scroll through the result table.

The following options are also available:

*   Adjusting the result view [Page 34]

- [Saving a result [Page 34]](#)

> If you execute several SQL statements at once in the SQL dialog [Page 23], several individual result tables are generated. You can use the selection list in the status line of the result window to switch between these result tables.

Adjusting the Result View

Use

You can display the result table [Page 33] in segments or consecutively. You can rename or hide columns, or fix (freeze) them in the result table to make scrolling easier, and you can change the font of the result table.

Procedure

1. To always display the result table in segments, choose *Clipped Result View* in the user settings [Page 9].
   In the SQL dialog [Page 23] and the Visual Query dialog [Page 29], you can change this setting for the current dialog window. To do this, choose
   SQL Dialog → Clipped Result View or Visual Query → Clipped Result View.

2. To rename, hide or fix columns, choose *Customize* in the context menu for the result. Make the following settings:

- Change the column names, if required.

- Change the *Visible* setting for the individual columns, if required.

- In *Fixed Columns*, enter the number of columns that you want to fix, starting from the left*.*

   Confirm your settings with *OK.*

3. To change the font of the result table, choose *Font* in the context menu for the result. Select the required font, and confirm with *OK*.

Saving a Result

Use

You can save the complete result [Page 33] of a database query as a text file or export it to Microsoft Excel. You can save individual cells as a text file, or display them in a separate zoom window.

Procedure

- To save the complete result table as a text file, choose *Export Result to → File* in the context menu for the result*.*
  When SQL Studio saves the result, it separates the columns with tabs, and the rows with line breaks. Column contents with the data type CHARACTER or LONG are cut off after 16 characters. Characters that cannot be displayed are replaced by blanks.

- To export the complete result table to Microsoft Excel, choose *Export Result to → Excel* in the context menu for the result*.*
  Microsoft Excel opens automatically, and transfers a maximum of 1024 bytes per cell. Data with type CHARACTER are cut off after 1021 bytes.

- To save a cell as a text file, choose *Export Cell to → File.*

- To display a cell in a separate zoom window, choose *Export Cell to → Zoom Window.*

> Exporting and/or displaying the contents of cells is particularly helpful for column contents that have data type LONG.