

# Database Transactions

## Database transactions

Work with the database for all the actions in D2000 environment (ESL script, [D2000 HI](#) environment) is implemented by process [D2000 DBManager](#). Execution of individual actions (SQL commands) is performed within some physical connection to the database. Several connections to one database may be created concurrently.

The existence of a connection is important during controlling the transaction access to the database. According to the mode of connection settings, the individual actions (SQL commands) are executed:

- immediately after their typing - *Auto Commit* mode,
- after the execution of the command COMMIT, that, in principle, finishes the transaction and applies all changes caused by the previous actions into the database. All the changes before the execution of the command COMMIT are regarded as pending.

Transaction mode, in many cases, is necessary to work with the database and may be controlled by ESL facilities.

ESL defines [sets of commands](#) for accessing a database table. Each of the sets is characterized (and is limited) by the existence of the logical operation **C**ONNECT and **D**ISCONNECT (e.g. [DB\\_CONNECT](#) and [DB\\_DISCONNECT](#)). These operations always create an access to a database table by means of an existing *Connection*. If *Connection* is not determined during the execution of the action **C**ONNECT, process [D2000 DBManager](#) will use so-called *Automatic connection* (*Default connection*). This works in *Auto Commit* mode and is shared (other **C**ONNECT without the determination of *Connect* uses again the existing *Automatic connection*). Process [D2000 DBManager](#) will generate it automatically.

The following actions are intended to work with *Connection*:

Action	Meaning
<a href="#">DB_TRANS_OPEN</a>	Create new <i>Connection</i>
<a href="#">DB_TRANS_COMMIT</a>	Execution of "COMMIT" action
<a href="#">DB_TRANS_ROLLBACK</a>	Execution of "ROLLBACK" action
<a href="#">DB_TRANS_CLOSE</a>	Execution of "ROLLBACK" action + termination of the <i>Connection</i>

By default, every access to database table in D2000 environment is done by means of *Automatic connection*, if not stated differently. This fact is represented in the following figure, where:

- **HI** process uses *Automatic connection*, for example during the work with the table in [Database tables](#).
- **Script 1** connections to table using the action [DB\\_CONNECT](#) without determining the *Connection*, and all consecutive action `DB_*` will be executed within *Automatic connection*.
- **Script 2** creates a new *Connection*. It executes the action [DB\\_CONNECT](#) within the *Connection*. After performing the required changes (which must be confirmed by the action [DB\\_TRANS\\_COMMIT](#)), it terminates the connection using the action [DB\\_TRANS\\_CLOSE](#).
- **Script 3** uses the actions `SQL_*` for accessing the database. In this case, the database is defined by so-called connection string and therefore [D2000 DBManager](#) creates a new *Connection*. If the connection string contains the key word **ACD** (**A**uto **C**ommit **D**isable), *Connection* is in the transaction mode and it is necessary to use the SQL command **COMMIT**.

