

Microsoft SQL Server - Transact-SQL language – basic level

Training objectives

The training is designed for anyone wishing to learn the technique of using relational databases. The skills acquired during the training can be useful in performing daily tasks in work of a programmer, database administrator and analyst creating various reports and statements.

During the training the participants will gain knowledge on the construction of a relational database and the principles of using SQL language for data processing. Knowledge of the basics of SQL can be used to independently obtain and transform data from databases operated in the organization. This is a valuable competency for people who deal with the generation of various statements, reports and analyses on a daily basis. The examples of SQL language application discussed during the course come from the most common scenarios of data presentation and analysis.

Skills

After completing the course, the participant will be able to:

- Create queries and work with objects contained in databases using the T-SQL language.
- Properly design a database, choose the right data types to match the requirements of the database structure.
- Create, modify and delete tables and data using T-SQL
- Design aggregate and group queries, use subqueries.

Audience profile

The training is intended for people who want to learn the technique of using relational databases. The skills acquired during the training can be useful in the daily work of a programmer, database administrator as well as an analyst creating various reports and statements.

Requirements

Participants of the training are required to know the Windows environment. Familiarity with basic relational database topics will be an added advantage.

Duration

3 days, 24 training hours

Training delivery method

The training is conducted in the form of alternating mini lectures and practical exercises. It combines technical expertise with practical examples of its use in the work environment.

Theoretical and practical knowledge

Relational databases

- basic concepts (table, column, row, relation, data integrity, data normalization, primary key, foreign key).

Microsoft SQL Server tools for working with T-SQL language.

SQL Server Management Studio.

Selecting data - SELECT command.

Filtering data - the WHERE clause.

Formatting the result of a query

- Column aliases,
- sorting data,
- TOP clause,
- removing duplicates.

Creating expressions in T-SQL language

- Data types used by SQL Server,
- explicit and implicit conversion.

Use of functions that operate on values:

- text
- dates and time periods.
- Grouping and aggregating data.

Connections

- principle of operation,
- types of joins,
- most common problems and errors faced when performing table joins.

Table operators

- PIVOT,

- UNPIVOT,
- APPLY.

Combining sets

- UNION,
- EXCEPT,
- INTERSECT.

Use of ordinary and correlated subqueries.

Common Table Expressions (CTE) - ordinary and recursive.

Data modification - commands:

- INSERT,
- UPDATE,
- DELETE,
- MERGE.

Transactions, data locking.

Use of indexes to optimize query performance

- Query processing,
- principles of query plan analysis,
- Design and establishment of indexes,
- types of indexes,
- evaluation of the use of indexes.

Creating tables

- defining columns,
- selection of data type,
- defining rules for data values (constraints).

Creating and using views.

Development path

After completing the training, it is recommended to take the following courses:

- T-SQL language - advanced level, which supplements the participant's knowledge with the use of window functions, views, system functions of the T-SQL language.
- T-SQL language - programming. The training allows the participant to master the development of stored procedures, functions and triggers. Discusses best practices for creating custom code.
- T-SQL language - query optimization and performance tuning - training discussing tools to improve query execution and principles for solving performance problems.
- SQL Server - administration. Training provides familiarity with the various components of SQL Server, allowing the creation of more effective scripts and programs in T-SQL.

Comarch Training Center
ul. Prof. Michała Życzkowskiego 33
31-864 Kraków, Poland

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COMARCH
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Comarch Training Center

ul. Prof. Michała Życzkowskiego 33
31-864 Kraków, Poland

Phone: +48 (12) 687 78 11

E-mail: training@comarch.com

WWW: comarch.com/training