SQL Advanced

Course Overview – 1-day course

A crucial skill for anyone working with data is the ability to access and analyse that data. Structured Query Language (SQL) enables users to access data from databases, combine data from multiple, related tables and to aggregate, sort, filter or limit the data retrieved as needed.

In this course, students will use more sophisticated techniques for querying databases and reshaping and manipulating result sets. Participants will learn to reshape data by pivoting and unpivoting. They will write more complex queries using subqueries, temporary tables and common table expressions. They will use recursive techniques to query hierarchical data and create date dimension tables. Students will build on their understanding of scalar user-defined functions and local variables to create table-valued functions and use table variables.

Students will also learn to simplify querying and increase their efficiency by using views and stored procedures.

In this course, students work with an Azure SQL database and write queries in Microsoft's Transact-SQL (T-SQL). Much of what is covered will be useful for users working with other database products.

Detailed Content

Introduction
SQL and T-SQL

Reshaping data
Use PIVOT to turn rows into columns
Use UNPIVOT to rotate columns into rows

Writing More Complex Queries

Subqueries
Local and global temporary tables
Create, modifying and delete temporary tables
Common table expressions
Nested CTEs
Recursive CTEs
Query hierarchical data
Create date dimension tables

More Complex Joins
Cross joins
Self joins

Variables
Local variables
Table variables
Temporary tables vs CTEs vs table variables

User-Defined Functions
Scalar user-defined functions
Table-valued functions
Multi-statement table-valued functions
Schemas
Use APPLY to join output from table-valued functions to a table

Control of Flow
IF…ELSE
BEGIN…END

Simplifying Code Reuse
Create, alter and delete views
Table-valued functions
Create, alter and delete stored procedures

Executing stored procedures with parameters

Query Performance
Improving query performance
Basic principles
Temporary tables, views, CTEs and table variables
Functions
Reusing code