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Sign up

MS-SQL Server 2022 Training
2 days (14 hours)

Presentation

Microsoft SQL Server 2022 is a SQL database management system (DBMS) incorporating a relational DBMS developed and marketed by Microsoft. It runs on Windows and Linux OS, but can also be run on Mac OS via Docker.

Transform your business with a unified data platform. SQL Server 2022 comes with Apache Spark and Hadoop Distributed File System (HDFS) to harness the full intelligence of your data.

SQL Server 2022 brings innovative security and compliance features, industry-leading performance, high availability and advanced analytics to all your workloads, now with built-in big data support.

SQL Server 2022 makes it easier to manage a big data environment. It provides the key elements of a distributed file system (HDFS), Spark and analysis tools integrated with SQL Server and fully supported by Microsoft. Deployment is facilitated using Linux containers on a Kubernetes-managed cluster.

In this training course, become an expert on this powerful Database, master the management of Big Data clusters & discover all the new features brought by this new version in 2022.

Objectives

- Identify resource bottlenecks in a running SQL Server instance
- Locate information on waiting statistics in DMVs and the query store
- Analyze the root cause of sub-optimal performance
- Diagnose I/O contention and lock contention

- SQL Server 2022 performance benchmark
- Reduce waiting times for the most common types of waiting
- Create a database, its tables and associated constraints
- Update database data
- Create functions, stored procedures and triggers to process data
- Import and export data from a database

Target audience

- Developers
- Project managers

Prerequisites

Basic programming skills. Knowledge of databases and SQL language.

Our SQL 2022 training program

Introduction to MSSQL 2022

- SQL Server basic architecture
- SQL Server editions and versions
- Getting started with SQL Server Management Studio
- Using SQL Server tools
- Using SQL Server Management Studio
- Creating and organizing T-SQL scripts

Introduction to T-SQL queries

- Introducing T-SQL
- Understanding sets
- Understanding predicate logic
- Understand the logical order of operations in SELECT statements

Introduction to T-SQL queries

- Executing basic SELECT statements
- Execute queries that filter data using predicates
- Execute queries that sort data using ORDER BY

Writing SELECT queries

- Writing simple SELECT statements
- Eliminating duplicates with DISTINCT
- Using column and table aliases
- Writing simple CAS expressions
- Writing basic SELECT statements
- Eliminate duplicates using DISTINCT
- Using column and table aliases
- Using a simple CASE expression

Querying multiple tables

- Understanding joins
- Querying with internal joins
- Query with external joins
- Query with cross-joins and automatic joins
- Writing queries using internal joins
- Writing queries using multi-table internal joins
- Writing self-adhesive queries
- Writing queries using external joins
- Writing cross-join queries

Data sorting and filtering

- Data sorting
- Data filtering with predicates
- Data filtering with TOP and OFFSET-FETCH
- Working with unknown values
- Write queries that filter data using a WHERE clause
- Write queries that sort data using a clause-based command
- Write queries that filter data using the TOP option
- Write queries that filter data using the OFFSET-FETCH clause

Using SQL Server data types

- Overview of SQL Server data types
- Use of personal data
- Using date and time data
- Write queries that return date and time data
- Writing queries using date and time functions
- Writing queries that return character data
- Writing queries that return character functions

Using DML to modify data

- Adding data to tables
- Data modification and deletion
- Automatic generation of column values
- Record insertion with DML

- Updating and deleting records with DML

Using built-in functions

- Writing queries with built-in functions
- Using the conversion functions
- Using logic functions
- Using functions to work with NULL
- Writing queries using conversion functions
- Writing queries using logic functions
- Writing nullity-testing queries

Data grouping and aggregation

- Using aggregation functions
- Use of GROUP PER Clause
- Group filtering with HAVING
- Writing queries using GROUP BY clause
- Writing queries using aggregation functions
- Writing queries using separate aggregate functions
- Writing queries that filter groups using the HAVING clause

Using subqueries

- Writing stand-alone sub-queries
- Drafting correlated sub-surveys
- Using the EXISTING predicate with subqueries
- Writing queries using autonomous subqueries
- Writing queries using scalar and multi-result subqueries
- Writing queries using correlated subqueries and an EXISTING clause

Using table expressions

- Using views
- Using online table valuation functions
- Using derived tables
- Use of common table expressions
- Writing queries using views
- Writing queries using derived tables
- Writing queries using common table expressions (ECU)
- Writing queries using expressions enhanced by online tables (TVF)

Using set operators

- Writing queries with the UNION operator
- Using EXCEPTER and INTERSECT

- Using APPLY
- Writing UNION queries Defining operators and UNION ALL
- Writing queries using the CROSS APPLY and OUTER APPLY operators
- Writing queries using the EXCEPT and INTERSECT operators

Using Windows sorting, shifting and aggregation functions

- Creating windows with OVER
- Exploring window functions
- Writing queries using ranking functions
- Writing queries using shift functions
- Writing queries using window aggregation functions

Swivel and grouping sets

- Writing queries with PIVOT and UNPIVOT
- Using grouping sets
- Writing queries using the PIVOT operator
- Write queries using the UNPIVOT operator
- Writing queries using the GROUPING SETS CUBE and ROLLUP sub-clauses

Executing stored procedures

- Querying data with stored procedures
- Passing parameters to stored procedures
- Creating simple stored procedures
- Working with Dynamic SQL
- Using the EXECUTE statement to call stored procedures
- Passing parameters to stored procedures
- Executing procedures stored in the system

Programming with T-SQL

- T-SQL programming elements
- Program sequence control
- Declaring variables and delimiting batches
- Using the flow control elements
- Using variables in a dynamic SQL statement
- Use of synonyms

Error handling implementation

- Implementing T-SQL error handling
- Implementing structured exception handling
- Error forwarding with TRY/CATCH

- Use THROW to return an error message to a client

Transaction implementation

- Transactions and database engines
- Operations control
- Transaction control with BEGIN, COMMIT and ROLLBACK
- Add error handling to a CATCH block

Companies concerned

This training course is aimed at both individuals and companies, large or small, wishing to train their teams in a new advanced computer technology, or to acquire specific business knowledge or modern methods.

Positioning on entry to training

Positioning at the start of training complies with Qualiopi quality criteria. As soon as registration is finalized, the learner receives a self-assessment questionnaire which enables us to assess his or her estimated level of proficiency in different types of technology, as well as his or her expectations and personal objectives for the training to come, within the limits imposed by the selected format. This questionnaire also enables us to anticipate any connection or security difficulties within the company (intra-company or virtual classroom) which could be problematic for the follow-up and smooth running of the training session.

Teaching methods

Practical course: 60% Practical, 40% Theory. Training material distributed in digital format to all participants.

Organization

The course alternates theoretical input from the trainer, supported by examples, with brainstorming sessions and group work.

Validation

At the end of the session, a multiple-choice questionnaire is used to check that skills have been correctly acquired.

Sanction

A certificate will be issued to each trainee who completes the course.