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Db2 12 for z/OS SQL Performance and Tuning  
Information

**Length:** 24.0 Hours  
**Ref:** CV964G □  
**Delivery method:** Classroom  
**Price:** AUD

Overview

This course is designed to teach the students how to prevent SQL performance problems and how to improve the performance of existing SQL.

Public

This course is for Db2 12 for z/OS application developers, Db2 12 for z/OS DBAs, and anyone else with a responsibility for SQL performance and tuning in a Db2 12 for z/OS environment.

Prerequisites

- Familiarity with SQL
- Familiarity with Db2 12 for z/OS
- Familiarity with Db2 12 for z/OS application programming

Topics

Introduction to SQL performance and tuning

- Performance issues
- Simple example
- Visualizing the problem
- Summary

Performance analysis tools

- Components of response time
- Time estimates with VQUBE3
- SQL EXPLAIN
- The accounting trace
- The bubble chart
- Performance thresholds

Index basics

- Indexes
- Index structure
- Estimating index I/Os
- Clustering index
- Index page splits

#### Access paths

- Classification
- Matching versus Screening
- Variations
- Hash access
- Prefetch
- Caveat

#### More on indexes

- Include index
- Index on expression
- Random index
- Partitioned and partitioning, NPSI and DPSI
- Page range screening
- Features and limitations

#### Tuning methodology and index cost

- Methodology
- Index cost: Disk space
- Index cost: Maintenance
- Utilities and indexes
- Modifying and creating indexes
- Avoiding sorts

#### Index design

- Approach
- Designing indexes

#### Advanced access paths

- Prefetch
- List prefetch
- Multiple index access
- Runtime adaptive index

## Multiple table access

- Join methods
- Join types
- Designing indexes for joins
- Predicting table order

## Subqueries

- Correlated subqueries
- Non-correlated subqueries
- ORDER BY and FETCH FIRST with subqueries
- Global query optimization
- Virtual tables
- Explain for subqueries

## Set operations (optional)

- UNION, EXCEPT, and INTERSECT
- Rules
- More about the set operators
- UNION ALL performance improvements

## Table design (optional)

- Number of tables
- Clustering sequence
- Denormalization
- Materialized query tables (MQTs)
- Temporal tables
- Archive enabled tables

## Working with the optimizer

- Indexable versus non-indexable predicates
- Boolean versus non-Boolean predicates
- Stage 1 versus stage 2
- Filter factors
- Helping the optimizer
- Pagination

## Locking issues

- The ACID test
- Reasons for serialization
- Serialization mechanisms

- Transaction locking
- Lock promotion, escalation, and avoidance

More locking issues (optional)

- Skip locked data
- Currently committed data
- Optimistic locking
- Hot spots
- Application design
- Analyzing lock waits

Massive batch (optional)

- Batch performance issues
- Buffer pool operations
- Improving performance
- Benefit analysis
- Massive deletes

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