Db2 Advanced SQL with Performance and Tuning For Programmers

Course Summary

Description

This course focuses on best practices for proper design, coding and maintenance techniques with the primary objective of improving Db2 performance. Students will learn specific factors which impact performance and how they can proactively address performance issues in their SQL and application programs. Students will learn the features of the EXPLAIN function, how it is used for optimization and how optimization hints can change the optimizer’s decisions. Participants will understand the purpose and function of the PLAN TABLE. This course includes features up to and including version 10 of Db2 for z/OS.

Topics

- Application Tuning
- SQL Statements That Can Affect Performance
- EXPLAIN Function
- Simple and Complex Access Paths
- Index Structure, Design, and Usage
- Db2 Buffer Pools and Their Impact on Performance

Audience

This course is designed for application programmers and programmer/analysts who will be using SQL statements in a high level programming language to manipulate Db2 tables.

Prerequisites

Before attending this course, students should have experience coding in one of the programming languages listed: COBOL, PL/I or C, TSO/ISPF and Db2 file structures.

Duration

Three days
Db2 Advanced SQL with Performance and Tuning For Programmers

Course Outline

I. Db2 Overview and Storage Concepts
   A. What is Db2?
   B. What is the History behind Db2?
   C. What are Db2’s Objectives?
   D. What is a Relational DBMS?
   E. What are Db2’s Features?
   F. Operational Environment
   G. SQL
   H. Program Preparation Process
   I. Unit of Recovery
   J. Commit / Rollback
   K. Db2 Terminology
   L. Physical Hierarchy of Db2 Objects
   M. Naming Conventions
   N. Object Naming Conventions
   O. Databases
   P. Db2 and VSAM
   Q. Storage Groups
   R. Page Management
   S. Tablespace
   T. Segmented Tablespaces
   U. Partitioned Tables
   V. Base Tables
   W. View Table
   X. Synonym
   Y. Indexes
   Z. Stored Procedures and Functions
   AA. Db2 String Data Types
   BB. Db2 Numeric Data Types
   CC. Data and Time Data Types
   DD. Display Formats
   EE. ROWID Data Type versus Identity Column Attribute
   FF. User-Defined Data Type
   GG. B2 Catalogs

II. Creating Db2 Objects using Data Definition Language
   A. Structured Query Language (SQL)
   B. DDL - Create Table Statement
   C. Identity Column
   D. Check Constraints
   E. Alter Table Statement
   F. Not NULL with Default
   G. Referential Integrity
   H. Synonyms

III. Referential Integrity
   A. Referential Integrity - Overview
   B. Delete Rules
   C. Insert and Update Implications
   D. Referential Integrity Summary
   E. DDL - Referential Integrity
   F. Primary Key Characteristics
   G. Foreign Key Characteristics
   H. Lab 1
   I. Data Model Lab
   J. Lab 1 - Loading Tables

IV. Advanced SQL - SELECT
   A. Join
   B. Inner Join
   C. Full Outer Join
   D. Left - Right Outer Join
   E. Joins of More Than 2 Tables
   F. User Request # 1
   G. Subquery
   H. Single Value Subquery
   I. Multivalued Subqueries
   J. Multivalued Subqueries - ALL
   K. Multivalued Subqueries - ANY or SOME
   L. Multiple Column Subqueries
   M. User request # 2
   N. Correlated Subqueries
   O. Correlated Subqueries - Exists
   P. Using Correlation Variables to Check R.I.
   Q. Nested table Expression
   R. Union
   S. Union All
   T. Rules for Union

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Db2 Advanced SQL with Performance and Tuning For Programmers

Course Outline (cont’d)

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VI. Additional Advanced Topics

| A.  | Handling XML data                               | IX.  | Lab - Tuning               |
| B.  | Summary                                           |        |                     |
| C.  | Overview of MQTs (Materialized Query Tables)   |        |                     |
| D.  | Overview of Recursive SQL                       |        |                     |
| E.  | Use of Dynamic SQL in Application Programs     |        |                     |
| F.  | Creating Global Temporary Tables                |        |                     |
| G.  | Use of Temporal Tables                          |        |                     |

VII. Db2 Buffers

| A.  | How Does It Work?                              |        |                     |
| B.  | Defining the Pools                             |        |                     |
| C.  | Virtual Buffer Pool Tuning                     |        |                     |
| D.  | Buffer Pool Size Terminology                   |        |                     |
| E.  | Buffer Pool Thresholds                         |        |                     |

X. Appendix – Overview of New Features for v10