

DB1037 – Advanced Query Tuning with IBM Data Studio on DB2 for z/OS

Course Synopsis	Duration:	Three (3) days
	Audience:	Application Architects, analysts, developers and DBAs involved in the development and support of DB2/SQL applications.
	Prerequisites:	A basic understanding of SQL optimization is helpful.
	Delivery Method:	Instructor led, Hands-on workshops

Brief Description

Get ready for a deep dive into DB2 for z/OS Optimization. This course is for the DB2 for z/OS development professional who desires to understand the fundamental issues associated with performance for SQL applications. Emphasis is placed on new considerations for the latest releases of DB2 and the use of IBM Data Studio as an optimization tool. Concepts discussed will be reinforced with appropriate workshops.

- Course Objectives What You'll Learn**
- Upon successful completion of this course, the student will be able to understand:
- When different types of access paths are desirable
 - The new statistics available in the latest releases of DB2 and their impact on access path selection
 - New optimization techniques available with the DB2 9 optimizer
 - How to use the information provided by IBM Data Studio to improve the performance of DB2 applications

- Topics Covered**
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| <p>I. Optimization Goals & Tools</p> <ul style="list-style-type: none"> • Goals of Optimization • Deciding what to tune • What causes CPU and I/O <ul style="list-style-type: none"> – Use of Functions, triggers, etc – Keeping too much data too long • Optimizer overview • Explain output <ul style="list-style-type: none"> – PLAN_TABLE – DSN_STATEMNT_TABLE – Additional Explain Tables • Viewing explain output in IBM Data Studio | <p>II. Access Paths with IBM Data Studio</p> <ul style="list-style-type: none"> • Single Table Access <ul style="list-style-type: none"> – Tablespace Scan – Sequential Prefetch – Index Scans – Index Screening – List Prefetch • Multiple Table Access <ul style="list-style-type: none"> – Optimizing Inner and Outer Joins – Join method selection – Sorting – Avoiding sorts – Join order • Predicate Transitive Closure |
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Topics
Covered Continued**III. Filter Factors & Performance**

- Catalog Statistics via IBM Data Studio
- What is a filter factor?
- Use in index selection
- Use in join order selection
- Use in join method selection
- How are filter factors calculated?

IV. Predicate Types

- Software levels
- Predicate processing order
- Viewing predicate details in IBM Data Studio
- Stage 1 vs Stage 2 processing

V. Case Studies in Optimizer Problems

- Case 1: 2 Possible Indexes
- Case 2: Join Order
- Case 3: Range Predicates
- Case 4: Host Variables

VI. Design for Performance

- Index Only Access for screening and data retrieval
- Clustering decisions
- Multiple Index Access
- Sort Avoidance
- Tablespace Compression
- Index Compression
- Index on Expression

VII. IBM Data Studio Features

- Saving access paths as XML files
- Building SQL statements
- Formatting SQL statements
- Explaining SQL statements
- Query Formatting
- Obtaining queries from packages
- Generating Service SQL
- Statistics Advisor

VIII. Top 35+ Tuning Tips for DB2 SQL Developers (and More)

- SQL Standards and Guidelines
- Programming guidelines
- DB2 SQL Tuning Tips

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