DB2 UDB for z/OS: Exploiting the DB2 Optimizer

WISE LTD.

COURSE CODE: DZOOPT

COURSE TITLE: Exploiting the DB2 Optimizer

AUDIENCE: Database Administrators, System Administrators, Application Developers, Programmers and System Programmers.

PREREQUISITES: A working knowledge of SQL predicate types, I/O types and SQL statements such as SELECTs, UPDATEs, JOINs, UNIONs, etc.

DURATION: 1 day

SUMMARY: This course uses information gained from our instructor's empirical knowledge coupled with that gained from a variety of IBM capacity planning and other publications to consolidate conclusions about the DB2 Optimizer. These conclusions, when observed, should assist those concerned with SQL and application performance in optimising the following:

- Use of filter factors
- I/O costs
- CPU costs
- Indexing
- Access path selection
- BIND/REBIND choices
- ZPARM choices
- IRLM choices

OBJECTIVES: Upon completion of this presentation, the participant should be conversant with how the DB2 Optimizer for z/OS chooses an access path, how the user can override the chosen access path, etc.

Exploiting the DB2 Optimizer
Core Topics

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1. **OVERVIEW**
   - Definition and inputs to the DB2 Optimizer
2. **STATEMENT PROCESSING (SQL STATEMENT PARSING)**
3. **USE OF CATALOG STATISTICS**
4. **QUERY TRANSFORMATION**
   - IN list
   - JOINS
   - NOT EXISTS
   - Etc.
5. **HOW THE OPTIMIZER ESTIMATES PROCESSOR COSTS**
   - Data Management (DM) per SQL
   - Relational Data System (RDS) costs per SQL
   - Sort costs
   - Locking costs
   - Data compression costs
6. **HOW THE OPTIMIZER ESTIMATES I/O COSTS**
   - Filter factors
   - Cluster ratios
   - Frequency statistics
   - Correlated statistics
   - OPTIMIZE FOR n ROWS
   - DM vs. RDS with regard to Stage 1 and Stage 2 predicates
7. **FOOLING THE OPTIMIZER**
   - Pros and cons
   - Manually updating catalog stats
   - Forcing an access path
8. **CONTROLLING ACCESS AT RUN-TIME**
   - Embedded dynamic SQL
   - REOPT(VARS)
   - Range predicates
   - Skewed distribution
   - Optimisation hints

9. RUN-TIME OPTIMISATION

- Index lookaside
- Dynamic prefetch
- Correlated subqueries & in memory tables
- Degree of parallelism
- VPSEQT
- Disabling prefetch
- Disabling parallelism
- Disabling list-prefetch
- LIKE predicates and index screening

10. OVERVIEW OF PLAN_TABLE & DSN_STATEMNT_TABLE

11. HOW TO MIRROR PRODUCTION STATS IN TEST SYSTEM

