

Course overview:

Oracle Database 10g

SQL Tuning

(D106eng, 4-day)



the courseware
company

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Overview and objectives

This course will equip developers to build efficient SQL statements and to tune applications from the standpoint of an application developer. When this effort is complemented by database server and possibly PL/SQL application tuning, then a highly efficient environment has been built.

Major subject areas to be explored are:

- Consider the unique and differing tuning issues in OLTP database and data warehouse environments
- Learn the phases of SQL statement execution within the database instance
- Use various techniques to examine SQL execution plans which are produced
- Learn about the operation of the Oracle Cost-Based Optimizer, including optimizer statistics and histograms
- Influence the behavior of the Optimizer and tune SQL statement execution
- Utilize the database advisory framework and those Advisors specifically intended for SQL tuning
- Use private and public stored outlines to achieve absolute execution plan stability
- Understand the self-tuning infrastructure and the automatic SQL tuning capabilities found within the database.

Who should attend?

The Target audience for this course is both senior application developers and database administrators. Developers who will be building, debugging and tuning complex SQL statements will benefit from this course. Database administrators responsible for tuning the database will need to collaborate with application developers in order to implement the techniques discussed herein

Suggested prerequisites

- Oracle Database 10g Introduction to SQL
 - Oracle Database 10g: Program With PL/SQL
 - Oracle Database 10g: Architecture For Developers
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CONTEMPLATING THE TUNING ISSUES

- DIFFERENCES BETWEEN APPLICATIONS • THE CHALLENGES OF TUNING • THE IMPACT OF THE SYSTEMS INFRASTRUCTURE • USING THE MANAGEMENT & ADVISORY FRAMEWORK

SQL STATEMENT EXECUTION

- THE EXECUTION PHASES • SQL EXECUTION MODES

VIEWING THE EXECUTION PLAN

- MORE ABOUT THE EXECUTION PLAN • VIEWING THE EXECUTION PLAN • MORE INTERPRETATION OF THE PLAN

UNDERSTANDING THE COST BASED OPTIMIZER (CBO)

- OPTIMIZATION GOALS • OPTIMIZER_FEATURES_ENABLE Parameter • CBO COMPONENTS

OPTIMIZER OPERATIONS

- TABLE ACCESS OPERATIONS • JOIN OPERATIONS • INDEX OPERATIONS

MANAGING OPTIMIZER STATISTICS

- MORE ABOUT OPTIMIZER STATISTICS • AUTOMATIC DATABASE STATISTICS COLLECTION • STATISTICS_LEVEL Parameter • GATHER_STATS_JOB • MANUALLY GATHERING STATISTICS • USING THE DBMS_STATS() PACKAGE • GATHER_TABLE_STATS() • GATHER_INDEX_STATS() • GATHER_SCHEMA_STATS() • GATHER_DATABASE_STATS() • USING THE EM INTERFACE • COLLECTING & MANAGING SYSTEM STATISTICS • MANAGING SYSTEM STATISTICS • CREATE_STAT_TABLE() • GATHER_SYSTEM_STATS() • GET_SYSTEM_STATS() • SET_SYSTEM_STATS() • IMPORT_SYSTEM_STATS() • EXPORT_SYSTEM_STATS() • DELETE_SYSTEM_STATS() • DROP_STAT_TABLE()
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PERFORMANCE MONITORING & PROACTIVE MAINTENANCE

- THE MANAGEMENT & ADVISORY FRAMEWORK • REAL-TIME MONITORS • MANAGING THE AUTOMATIC WORKLOAD REPOSITORY • AUTOMATIC DATABASE DIAGNOSTIC MONITOR • METRICS & ALERT THRESHOLDS

USING ADDM & THE SQL TUNING ADVISOR

- APPLICATION TUNING SETUP • APPLICATION MONITORING & TUNING WITH EM • SQL TUNING ADVISOR

PROGRAMMATIC ACCESS TO THE SQL TUNING ADVISOR

- ABOUT SQL TUNING ADVISOR TASKS • SQL PROFILE MANAGEMENT • ACCEPT_SQL_PROFILE() • ALTER_SQL_PROFILE() • DROP_SQL_PROFILE() • SQL TUNING SET MANAGEMENT

USING THE SQL ACCESS ADVISOR

- USING THE SQL ACCESS ADVISOR • PERFORMING A QUICK TUNE TASK • INDEX OPERATION DATABASE PARAMETERS • OPTIMIZER_INDEX_COST_ADJ • OPTIMIZER_INDEX_CACHING • SKIP_UNUSABLE_INDEXES

OPTIMIZER HINTS

- ABOUT HINTS • HINT EXPLANATIONS
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HISTOGRAMS

- WHY ARE HISTOGRAMS NEEDED? • HISTOGRAMS INTERNAL STRUCTURE • MANUALLY MANAGING HISTOGRAMS

USING PLAN STABILITY

- ABOUT PLAN STABILITY • PREPARING FOR STORED OUTLINES • CREATING & USING STORED OUTLINES • DATA DICTIONARY STORAGE • MANAGING STORED OUTLINES • DROP OUTLINE • ALTER OUTLINE • DBMS_OUTLN()

EDITING PRIVATE OUTLINES

- ABOUT PRIVATE OUTLINES • EDITING PRIVATE OUTLINES • UTILIZING PRIVATE OUTLINES

EXPLOITING & MANAGING CURSOR SHARING

- ABOUT CURSOR SHARING vBIND VARIABLES & CURSOR PEEKING • USING THE CURSOR_SHARING PARAMETER

USING TKPROF & AUTOTRACE

- USING TKPROF • USING AUTOTRACE

MANAGING SCHEMA OBJECTS

- ABOUT CHAINED & MIGRATED ROWS • VALIDATING DATABASE OBJECTS

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