Oracle Database 10*g*: SQL Tuning Workshop

Duration 3 Days

What you will learn:

This course is designed to give the experienced SQL Developer or DBA a firm foundation in SQL tuning techniques. The participant learns the necessary knowledge and skills to effectively tune SQL in the Oracle Database 10g. They learn about tuning methodology as well proactive tuning and reactive tuning methods. Students are introduced to the benefits of the new automatic tuning mechanisms available in Oracle Database 10g. On completion of the course they are able to compare and contrast the steps involved to tune manually as in prior releases as well as use the automatic SQL tuning features provided in the current release. Students gain a thorough conceptual understanding of the Oracle Optimizer, and reinforce instructor-led learning with structured hands-on practices. The course uses a series of challenge-level workshops, allowing students to "play, discover, and learn" at their own level and pace. The students learn to use the Oracle diagnostic tools and facilities: Automatic SQL Tuning components, EXPLAIN, SQL Trace and TKPROF, SQL*Plus AUTOTRACE. Students also learn to influence the behavior of the Optimizer by changing the physical schema and modifying SQL statement syntax.

This course counts towards the Hands-on course requirement for the Oracle Database 10g Administrator Certification. Only instructor-led inclass or instructor-led online formats of this course will meet the Certification Hands-on Requirement. Self Study CD-Rom and Knowledge Center courses are excellent study and reference tools but DO NOT meet the Hands-on Requirement for certification.

Audience:

- Forms Developer
- PL/SQL Developer
- Technical Consultant
- Reports Developer
- Business Intelligence Developer
- Java Developer

Prerequisites:

Required Prerequisites:

Suggested Prerequisites:

- Oracle Database 10*g*: PL/SQL Fundamentals

Course Objectives:

- Describe the basic steps in processing SQL statements
- Describe the causes of performance problems
- Understand where SQL tuning fits in an overall tuning methodology
- Describe Automatic SQL Tuning
- Use the diagnostic tools to gather information about SQL statement processing
- Understand Optimizer behavior
- Influence the optimizer behavior
- Influence the physical data model so as to avoid performance problems

Course Topics:

Database Architecture overview

- Overview of Database architecture
- Listing the SQL Statement Processing Steps
- Identifying Means to Minimize Parsing
- Stating the Use of Bind Variables

Following a Tuning Methodology

- Describing the Causes of Performance Problems
- Identifying Performance Problems
- Using a Tuning Methodology

Designing Applications for performance

- Oracle Methodology
- Understanding Scalability
- System Architecture
- Application Design Principles
- Deploying New Applications

Introducing the optimizer

- Describe the functions of the Oracle optimizer
- Identify the factors that the optimizer considers when it selects an execution plan
- Set the optimizer approach at the instance and session level
- Use dynamic sampling

Optimizer Operations

- Execution plans
- Types of Joins

Displaying Execution plans

- Using the EXPLAIN PLAN Command
- Interpreting EXPLAIN Output
- Interpreting AUTOTRACE Statistics

Gathering Statistics

- Using the DBMS_STATS Package
- Identifying Table, Column, and Index Statistics
- Building Histograms

Application Tracing

- Statspack
- End to End tracing
- Invoking the SQL Trace Facility
- Setting Up Appropriate Initialization Parameters
- Formatting Trace Files with TKPROF
- Interpreting the Output of the TKPROF Command

Identifying High Load SQL

- Use different methods to identify high-load SQL
- ADDM
- Top SQL
- Dynamic Performance views
- Statspack

Automatic SQL Tuning

- Query Optimizer Modes
- Types of Tuning Analysis
- SQL Tuning Advisor
- SQL Tuning Sets
- Top SQL

Introduction to Indexes

- Identifying Row Access Methods
- Creating B-Tree Indexes
- Understanding B-Tree Index Access and Index Merging

Advanced Indexes

- Using Bitmapped Indexes

- Using Function-Based Key Indexes

Optimizer Hints and Plan Stability

- Using Hints
- Purpose and Benefits of Optimizer Plan Stability

Materialized Views and Temporary Tables

- Using the CREATE MATERIALIZED VIEW Syntax
- Utilizing Query Rewrites