

## **ORA400 - SQL Tuning Techniques**

### *Troubleshoot and Tune SQL Statement Execution*

Hands-on **2 day course**

#### **Course Description**

This course helps participants learn effective application tuning techniques for optimizing performance in the Oracle server environment. Topics in this course are: troubleshooting application performance, utilizing Oracle supplied diagnostic utilities, and creating physical structures to improve application performance. Exercises and lab sessions reinforce the learning objectives and provide participants the opportunity to gain practical hands-on experience.

#### **You Learn to...**

- Apply a Tuning Methodology
- Utilize Explain Plan, TKPROF and the SQL Trace Diagnostic Tools
- Optimize Performance with Clusters and Indexes
- Define Cost- or Rule-based Optimization
- Pass Optimizer Hints
- Tune PL/SQL Code

#### **Who Needs to Attend**

- Data Analysts
- Data Administrators
- System Administrators
- Developers
- Support Staff

#### **Prerequisites:**

You must have knowledge of SQL or attend the Oracle8 SQL and PL/SQL course.

#### **Follow-On Courses**

Oracle8 Develop Database Objects



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## **Course Content:**

### **1. Tuning Goals and Methods**

- SQL Statement Execution Analysis
- Tuning Methodology
- Tuning Concepts
- Tuning Objectives
- Tuning SQL Statements

### **2. SQL Statement Execution Process**

- The Shared Pool
- SQL Processing
- Shared SQL and PL/SQL
- V\$LIBRARYCACHE
- V\$SYSSTAT
- V\$SQLAREA
- Coding Standards

### **3. Data Access Methods and Index Strategies**

- Full Table Scans
- Multiblock Read Count
- B\*Tree Index
- Index Usage
- Unique/Non-Unique Indexes
- Composite/Bitmapped Indexes
- Index Views
- Index/Hash Cluster
- Remove Indexes

### **4. Join Types and Operations**

- Join Types
- Join Operations
- Multiple Table Joins
- Join Order
- Join Operations
- Parameter File Options

### **5. Explain Plan**

- Tuning Utilities
- Execution Process
- Statement Evaluation and Transformation
- Explain Plan
- PLAN Table

- Format PLAN Table Output
- Access and Join Methods
- Operation Types

### **6. Oracle Optimization**

- Rule-based Optimization
- Ranking Access Paths
- Cost-based Optimization
- Cost-Based Optimization Methods
- ANALYZE Command
- Dictionary Statistics
- Optimizer Mode
- Influencing the Optimizer
- Optimizer Hints
- Deleting Statistics

### **7. SQL\*Trace**

- SQL\*Trace Environment
- SQL\*Trace Steps
- Manage SQL\*Trace for an Instance
- ALTER SESSION Command
- Analyze SQL\*Trace Output

### **8. TKPROF**

- TKPROF Usage
- TKPROF Syntax
- TKPROF Output
- TKPROF Statistics
- Analysis Results
- Summary Statistics
- Additional Tuning Tools

### **9. SQL\*Plus AUTOTRACE**

- Setup Requirements
- AUTOTRACE Syntax
- Enable AUTOTRACE
- Explain Plan Output
- Performance Statistics Output
- Timing Statistics



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