

KNOWLEDGE  
POWER



Exploring the Oracle Database Architecture

Introduction to SQL Tuning

Introduction to the Optimizer

Optimizer Operators

Interpreting Execution Plans

# ORACLE 11g SQL Tuning

Case Study: Star Transformation

Optimizer Statistics

Using Bind Variables

Using Optimizer Hints

Application Tracing

Automating SQL Tuning



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# ORACLE 11g SQL Tuning

The SQL Tuning class covers methods that reveal detail about how the Oracle database executes a SQL statement.

## Learn

1. Identify Poorly Performing SQL
2. Understand the Query Optimizer
3. Trace applications
4. Monitor SQL execution in real time
5. Interpret execution plans

## Course Objectives

1. Identify problem SQL statements
2. Modify a SQL statement to perform at its best
3. Trace an application
4. Understand how the Query Optimizer makes decisions about how to access data
5. Interpret execution plans
6. Use optimizer hints effectively



### Session Hours

3 days

### Who are we?

Data Softech Incorporation is a dynamic and progressive organization committed to provide an affordable and flexible Database Administration, Solution, Consultation and Employee or Staff training to meet the client needs. We have been working with major Fortune 500 companies.



# ORACLE 11g SQL Tuning

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## Trainers

*Our database training experts come from various IT backgrounds and possess market-specific IT qualifications. These specialists have worked on various data management fields with leading database industries in Information Technology.*

## Tutorials

*DSI custom designed tutorials and live training on key projects helps the learners gain a quality and accountable experience with various projects.*



## Lesson Plan

**DAY 1**

### Exploring the Oracle Database Architecture

- Oracle Database Server Architecture: Overview
- Oracle Database Memory Structures: Overview
- Background Process Roles
- Automatic Shared Memory Management
- Automated SQL Execution Memory Management
- Automatic Memory Management
- Database Storage Architecture
- Logical and Physical Database Structures

### Introduction to SQL Tuning

- Reasons for Inefficient SQL Performance
- Performance Monitoring Solutions
- Monitoring and Tuning Tools: Overview
- EM Performance Pages for Reactive Tuning
- CPU and Wait Time Tuning Dimensions
- Scalability with Application Design, Implementation, and Configuration
- Common Mistakes on Customer Systems
- Proactive Tuning Methodology

### Introduction to the Optimizer

- Structured Query Language
- SQL Statement Representation, Implementation & Processing: Overview
- SQL Statement Parsing: Overview
- Why Do You Need an Optimizer?
- Optimization During Hard Parse Operation
- Cost-Based Optimizer
- Controlling the Behavior of the Optimizer
- Optimizer Features and Oracle Database Releases

# ORACLE 11g SQL Tuning

DAY 2



## Training Benefits

*Our certified and highly experienced trainers will help you equip with the IT knowledge and database management solutions that helps you independently assess and utilize the updated technology skills in any business-IT firm. We provide state-of-art infrastructure to incorporate our training practices.*

## Affordable Training

*DSI custom designs the training addressing the clients, their staff or learners needs thus maximizing the benefit they gain from their training investment.*



## Optimizer Operators

- Row Source Operations
- Main Structures and Access Paths
- Full Table Scan
- Indexes: Overview
- Using Indexes: Considering Nullable Columns
- Bitmap Indexes, Composite Indexes & Invisible Index
- Guidelines for Managing Indexes
- Clusters

## Interpreting Execution Plans

- Execution Plan
- Links Between Important Dynamic Performance Views
- Automatic Workload Repository (AWR)
- Generating SQL Reports from AWR Data
- SQL Monitoring: Overview
- Reading More Complex Execution Plans
- Reviewing the Execution Plan
- Looking Beyond Execution Plans

## Case Study: Star Transformation

- The Star & Snowflake Schema Model
- Execution Plan Without Star Transformation
- Retrieving Fact Rows from One Dimension All Dimensions
- Joining the Intermediate Result Set with Dimensions
- Using Bitmap Join Indexes
- Star Transformation
- Bitmap Join Indexes

## Optimizer Statistics

- Optimizer Statistics & Types of Optimizer Statistics
- Multicolumn Statistics: Overview
- Expression Statistics: Overview
- Gathering System Statistics
- Statistic Preferences: Overview
- Optimizer Dynamic Sampling: Overview
- Locking Statistics

# ORACLE 11g SQL Tuning

DAY 3



## Training Courses

*Oracle 11g New features*

*Oracle 11g R2 RAC Administration*

*Oracle 11g R2 Administration I*

*Oracle 11g R2 Administration II*

*Oracle 11g R1 RAC Administration*

*Oracle 11g/10g Performance tuning*

*Oracle 11g/10g Streams*

*Oracle 11g/10g Data Guard*

*Oracle 11g/10g Backup*

*Oracle 11g/10g Recovery using RMAN*

*Oracle Application server Administration I*

*Oracle Application server Administration II*

*Oracle 10g Sql Tuning*

*Oracle Apps 11i System Administration*

*Installations*



### Using Bind Variables

- Cursor Sharing and Different Literal Values
- Cursor Sharing and Bind Variables
- Bind Variables in SQL\*Plus & Enterprise Manager
- Cursor Sharing Enhancements
- Adaptive Cursor Sharing: Overview
- Interacting with Adaptive Cursor Sharing

### Using Optimizer Hints

- Optimizer Hints: Overview
- Types of Hints
- Specifying Hints
- Rules for Hints
- Hint Recommendations
- Hint Categories
- Optimization Goals and Approaches
- Additional Hints

### Application Tracing

- End-to-End Application Tracing Challenge
- Location for Diagnostic Traces
- What Is a Service?
- Use Services with Client Applications
- Trace Your Own Session
- SQL Trace File Contents
- Formatting SQL Trace Files: Overview
- Invoking the tkprof Utility

### Automating SQL Tuning

- Tuning SQL Statements Automatically
- Application Tuning Challenges
- SQL Tuning Advisor: Overview
- Stale or Missing Object Statistics
- SQL Statement Profiling
- Plan Tuning Flow and SQL Profile Creation
- Database Control and SQL Tuning Advisor
- Implementing Recommendations