



Oracle Database 12c R2: SQL Tuning for Developers

In this application development-centric course, students learn about Oracle SQL statement tuning and how to write well-tuned SQL statements appropriate for the Oracle database. Students learn to interpret execution plans and the different ways in which data can be accessed. Students are shown how to decipher, decide and then apply tuning to their SQL code. Various tuning techniques are demonstrated. For example, taking advantage of bind variables, trace files, and using the different types of indexes.

Learn To:

- Use Oracle tools to identify inefficient SQL statements.
- Use Automatic SQL Tuning.
- Use Real Time SQL monitoring.
- Write more efficient SQL statements.
- Monitor and trace high load SQL statements.
- Manage optimizer statistics on database objects.
- Understand the optimizer process steps and operators.
- Interpret execution plans.
- Perform application tracing.

Benefits To You:

Benefit from gaining a deeper understanding of Oracle SQL statement tuning and how to write well-tuned SQL statements appropriate for the Oracle database in this application development-centric course. You will learn how to decipher, decide and then apply tuning to your SQL code. Various tuning techniques are demonstrated.

Prerequisites

Required Prerequisite Courses: • [Oracle Database: Introduction to SQL](#) Required Prerequisite Skills: • Familiarity with database architecture • Knowledge of SQL and PL/SQL

Audience

- Administrator
- Developer

Objectives

- Modifying a SQL statement to perform at its best
- Identifying poorly performing SQL
- Tracing an application through its different levels of the application architecture
- Understanding how the Query Optimizer makes decisions about how to access data
- Defining how optimizer statistics affect the performance of SQL
- Listing the possible methods of accessing data, including different join methods

Topics

- Introduction
 - Course Objectives, Course Agenda and Appendixes Used in this Course
 - Audience and Prerequisites
 - Sample Schemas Used in the Course
 - Class Account Information
 - SQL Environments Available in the Course
 - Workshops, Demo Scripts, and Code Example Scripts
 - Appendixes in the Course
- Introduction to SQL Tuning
 - SQL Tuning Session
 - SQL Tuning Strategies
 - Development Environments: Overview
 - SQLTXPLAIN (SQLT) Diagnostic Tool
- Using Application Tracing Tools
 - Using the SQL Trace Facility: Overview
 - Steps Needed Before Tracing
 - Available Tracing Tools: Overview
 - The tresess Utility
 - Formatting SQL Trace Files: Overview
- Understanding Basic Tuning Techniques
 - Developing Efficient SQL statement
 - Scripts Used in This Lesson
 - Table Design
 - Index Usage
 - Transformed Index
 - Data Type Mismatch
 - NULL usage
 - Tune the ORDER BY Clause
- Optimizer Fundamentals
 - SQL Statement Representation
 - SQL Statement Processing
 - Why Do You Need an Optimizer?
 - Components of the Optimizer
 - Query Transformer
 - Cost-Based Optimizer
 - Adaptive Query Optimization
 - Optimizer Features and Oracle Database Releases
- Generating and Displaying Execution Plans
 - Execution Plan?

- The EXPLAIN PLAN Command
- Plan Table
- AUTOTRACE
- V\$SQL_PLAN View
- Automatic Workload Repository
- SQL Monitoring
- DBML_SQL_MONITOR
- Interpreting Execution Plans and Enhancements
 - Interpreting a Serial Execution Plan
 - Adaptive Optimizations
 - Optimizer: Table and Index Access Paths
 - Row Source Operations
 - Main Structures and Access Paths
 - Full Table Scan
 - Indexes
 - Common Observations
- Optimizer Join Operations
 - Join Methods
 - Join Types
- Other Optimizer Operators
 - SQL operators
 - Other N-Array Operations
 - Result Cache operators
- Introduction to Optimizer Statistics Concepts
 - Optimizer Statistics
 - Types of Optimizer Statistics
 - Gather and Manage Optimizer Statistics: Overview
- Using Bind Variables
 - Cursor Sharing and Different Literal Values
 - Cursor Sharing and Bind Variables
- SQL Plan Management
 - Maintaining SQL Performance
 - SQL Plan Management
- Workshops
 - Workshop 1
 - Workshop 2
 - Workshop 3
 - Workshop 4
 - Workshop 5
 - Workshop 6 & 7
 - Workshop 8
 - Workshop 9