Introduction to Oracle SQL Programming

A Relational Database Management System (RDBMS) is a software system that allows you to create and manage a relational database. Minimum requirements for such a system are defined by both ANSI and ISO. The Structured Query Language (SQL) is the international standard language for relational database management systems. SQL is robust enough to be used by users with non-technical backgrounds, as well as by professional developers and administrators.

In this class, students will learn how to create, retrieve, and manipulate objects in Oracle 10*g* Structured Query Language (SQL). Students will also be introduced to Oracle 10*g* database features and tools.

Course Objectives:

- Describe the features of a Relational Database.
- Interact with a Relational Database Management System.
- Use SQL*Plus to connect to an Oracle database and submit SQL statements.
- Write SQL queries.
- Use SQL functions.
- Use a query to join together data items from multiple tables.
- Write nested queries.
- Perform summary analysis of data in a query.
- Add, change, and remove data in a database.
- Manage database transactions.
- Work in a multi-user database environment.
- Create and manage tables and other database objects.
- Control access to data.

Audience: Application developers, database administrators, system administrators and users who write applications and procedures that access an Oracle 10*g* database.

Prerequisites: Familiarity with relational database concepts is recommended.

Number of Days: 2 days

1. Course Introduction
Course Objectives
Overview
Suggested References

2. Relational Database and SQL Overview
Review of Relational Database Terminology
Relational Database Management Systems
Introduction to SQL
Oracle Versioning and History
Logical and Physical Storage Structures
Connecting to a SQL Database
Datatypes
Sample Database

3. Using Oracle SQL*Plus
SQL*Plus
The SQL Buffer
Buffer Manipulation Commands
Running SQL*Plus Scripts
Tailoring Your SQL*Plus Environment
Viewing Table Characteristics

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SQL*Plus Substitution Variables
Interactive SQL*Plus Scripts
SQL*Plus LOB Support
Using iSQL*Plus
Graphical Clients

4. SQL Queries - The SELECT Statement

The SELECT Statement
The CASE...WHEN Statement
Choosing Rows with the WHERE Clause
NULL Values
Compound Expressions
IN and BETWEEN
Pattern Matching: LIKE and REGEXP_LIKE
Creating Some Order

5. Scalar Functions

SQL Functions
Using SQL Functions
String Functions
Numeric Functions
Date Functions
Date Formats
Conversion Functions
Literal Values
Intervals
Oracle Pseudocolumns

6. SQL Queries - Joins

Selecting from Multiple Tables
Joining Tables
Self Joins
Outer Joins

7. Aggregate Functions and Advanced Techniques

Subqueries
Correlated Subqueries
The EXISTS Operator
The Aggregate Functions
Nulls and DISTINCT
Grouping Rows
Combining SELECT Statements

8. Data Manipulation and Transactions

The INSERT Statement
The UPDATE Statement
The DELETE Statement
Transaction Management
Concurrency
Explicit Locking
Data Inconsistencies
Loading Tables From External Sources

9. Data Definition and Control Statements

Datatypes
Defining Tables
Constraints
Inline Constraints
Modifying Table Definitions
Deleting a Table Definition
Controlling Access to Your Tables

10. Other Database Objects

Views
Creating Views
Updatable Views
Sequences
Synonyms

11. Appendix A – The Data Dictionary

Introducing the Data Dictionary
DBA, ALL, and USER Data Dictionary Views
Some Useful Data Dictionary Queries

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