

# Introduction to Oracle9i with SQL (5 Days)

## Custom Training Institute

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## Introduction to ORACLE9i with SQL (CTI 152)

*This five-day, hands-on course provides a comprehensive introduction to the following Oracle9i key features and concepts: 1) The Oracle relational database engine management system (RDBMS), a powerful means for organizing, extracting, manipulating and reporting information in corporate environments; 2) Structured Query Language (SQL), Oracle's language for adding, deleting and modifying information stored within the database; 3) Oracle's SQL\*Plus interaction environment, used to accept, validate and execute requests against the Oracle RDBMS; 4) Programming Language for Structured Query Language (PL/SQL), Oracle's developer-level programming language for automating, scheduling and executing data extraction, transformation and reporting tasks; 5) Oracle's Enterprise Manager, offering developers, end-users and administrators a graphical user interface (GUI) for querying and manipulating information within Oracle databases.*

*Required Prerequisites:* *Participants should have a working knowledge of a structured programming language, such as C, C++, C#, Java or Visual BASIC. Familiarity with relational database management system (RDBMS) concepts and structured query language (SQL) is helpful, but not necessary. Student exercises are developed using any ASCII-based text editor, such as Notepad, and are executed in Oracle's SQL\*Plus environment. Some students have found an external tool, such as EasySQL Checker for Oracle <http://www.wnagz.net/esquchk.htm>, to be a useful syntax checker for SQL queries. However, such a tool is NOT required for this course.*

*Minimum hardware requirements (per student):* *500 MHz Pentiums (or comparable), 128 or 256 Mb RAM, 700 Mb to 1 gig free hard disk space before installation. Machines should be set up with STATIC Internet Protocol (IP) addresses before installation of Oracle.*

*Software requirements:* *Oracle9i and Java SDK 1.2 installed on server, SQL\*Plus installed on each workstation (student and instructor). Microsoft Windows NT with latest service pack or UNIX installed on server, with Windows NT or Windows 2000 on clients. Sample database installed on server.*

*Microsoft PowerPoint and Internet access* *on Instructor's workstation for presentation purposes.*

### Module 1: Introduction to Oracle9i with SQL

- Life Cycle Development Phases
- Defining a Database
- Theoretical, Conceptual and Physical Aspects of a Relational Database
- How a Relational Database Management System (RDBMS) is Used to Manage a Relational Database
- Oracle Implementation of Both RDBMS and Object Relational Database Management System (ORDBMS)

### Module 2: Writing a Basic SQL Statement

- SQL Select Capabilities
- Executing a Basic Select Statement with the Mandatory Clauses
- Differentiating between SQL and iSQL\*Plus Commands

### Module 3: Restricting and Sorting Data

- Limiting the Rows Retrieved by a Query
- Sorting the Rows Retrieved by a Query

### Module 4: Single Row Functions

- Various Types of Functions Available in SQL
- Using a Variety of Character, Number, and Date Functions in Select Statements
- Conversion Functions and How They are Used

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## Module 5: Displaying Data from Multiple

### Tables

- Writing Select Statements to Access Data from More than One Table
- Describing the Cartesian Product
- Describing and Using the Different Types of Joins
- Writing Joins Using the Tips Provided
- Aggregating Data by Using Group Functions
- Identifying the Different Group Functions Available
- Explaining the Use of Group Functions
- Grouping Data by Using the GROUP BY Clause

## Module 6: Writing Subqueries

- Types of Problems Subqueries Can Solve
- Describing Subqueries
- Types of Subqueries
- Writing Single-Row and Multi-Row Subqueries
- Behavior of Subqueries when Null Values are Retrieved

## Module 7: Producing Readable Output with iSQL\*Plus

- Producing Queries that Require an Input Variable
- Customizing the iSQL\*Plus Environment
- Producing More Readable Output
- Creating and Executing Script Files

## Module 8: Manipulating Data

- Describing Each Data Manipulation Language (DML) Command
- Inserting Rows into a Table
- Updating Rows in a Table
- Deleting Rows from a Table
- Merging Rows into a Table
- Controlling Transactions
- Describing Transaction Processing
- Describing Read Consistency and Implicit and Explicit Locking

## Module 9: Creating and Managing Tables

- Describing the Main Database Object
- Creating Tables
- Describing the Oracle Data Types
- Altering Table Definitions
- Dropping, Renaming, and Truncating Tables

## Module 10: Including Constraints

- Describing Constraints
- Creating and Maintaining Constraints

## Module 11: Creating Views

- Describing Views and Their Uses
- Creating a View
- Retrieving Data by Means of a View
- Inserting, Updating, and Deleting Data through Views
- Dropping Views
- Altering the Definition of a View
- Inline Views
- Top 'N' Analysis

## Module 12: Using Set Operators

- Describing the Set Operators
- Obeying the Set Operators Rules and Guidelines
- Using a Set Operator to Combine Multiple Queries into a Single Subquery
- Controlling the Order of Rows Returned

## Module 13: Oracle9i Single Row Functions

- Using DATETIME Functions
- Using the NVL2 Function to Handle Null Values

## Module 14: Enhancements to the GROUP BY Clause

- Using ROLLUP as an Extension to the GROUP BY Clause to Produce Subtotal Values
- Using CUBE as an Extension to the GROUP BY Clause to Produce Cross-Tabulation Values
- Using the GROUPING Function to Identify the Row Values Creating by ROLLUP or CUBE Operators
- Using GROUPING SETS to Produce a Single Result Set Equivalent to a UNION ALL Approach
- Using the WITH Clause

## Module 15: Advanced Subqueries

- Updating and Deleting Rows by Using Correlated Subqueries
- Writing a Multicolumn Subquery
- Describing and Explaining the Behavior of Subqueries when Null Values are Retrieved
- Writing a Subquery in a FROM Clause
- Types of Problems that can be Solved with a Correlated Subquery
- Describing a Correlated Subquery
- Writing Correlated Subqueries
- Using the EXISTS and NOT EXISTS Operators

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**Module 16: Extensions to DDL and DML**

**Statements**

- Multitable Inserts
- Creating and Using External Tables
- Naming the Index and Using the CREATE INDEX Command at the Time of Creating Primary Key Constraint

**Module 17: Writing Scripts to Generate**

**Scripts**

- Types of Problems that are Solved by Writing SQL Scripts that Generate Other SQL Scripts
- Writing and Executing Scripts that Generate Scripts with Commands to Create and Drop Tables
- Writing and Executing a Script that Generates a Script of INSERT INTO Commands