ORACLE DATABASE: INTRODUCTION TO SQL

CORPORATE COLLEGE SEMINAR SERIES

Date: October 15 – November 15

Presented by: Lone Star Corporate College in partnership with the University of Houston

Location: Lone Star College-University Park
20515 State Highway 249 (@ Louetta Rd.)
Houston, TX 77070

Meets: Monday & Thursdays from 6-10 p.m.

Description: Learn the concepts of relational database and control privileges at the object and system level, as well as the essential SQL skills to write queries against single and multiple tables, manipulate data in tables, and create database objects.

Who should attend: This workshop is designed for application developers, business analysts, data warehouse administrators, developers, forms developers, PL/SQL developers, and system analysts (NOTE: While appropriate for a 10g audience, there are differences between 10g and 11g features).

Objective: In this workshop, you will learn how to create reports of sorted and restricted data, run data manipulation statements (DML) to update data, control database access to specific objects, manage schema objects, manage objects with data dictionary views, and retrieve row and column data from a table.

Course topics Include:

- Introducing Oracle Database 11g
- Retrieving data using the SQL SELECT Statement
- Restricting and sorting data
- Using single-row functions to customize output
- Using conversion functions and conditional expressions
- Reporting aggregated data using the group functions
- Displaying data From multiple tables using joins
- Using sub-queries to solve queries
- Using the SET Operators
- Manipulating data
- Using DDL Statements to create and manage tables
- Creating other schema objects
- Controlling user access
- Managing schema objects
- Managing objects with data dictionary views
- Manipulating large data sets
- Managing data in different time zones
- Retrieving data using sub-queries

Hours: 40
Cost: $1,500

For more information, contact:
Michael Burns
Sr. Program Manager of Business and Information Technology
Michael.Burns@LoneStar.edu
281.290.2925
Oracle Database: Introduction to SQL

What You Will Learn

In this course, students learn the concepts of relational databases. This course provides the essential SQL skills that allow developers to write queries against single and multiple tables, manipulate data in tables, and create database objects. Students learn to control privileges at the object and system level.

This course covers creating indexes and constraints, and altering existing schema objects. Students also learn how to create and query external tables. Students learn to use the advanced features of SQL to query and manipulate data within the database, use the dictionary views to retrieve metadata and create reports about their schema objects.

Students also learn some of the date-time functions available in the Oracle Database. This course discusses how to use the regular expression support in SQL.

This course is a combination of Oracle Database 11g: SQL Fundamentals I and Oracle Database 11g: SQL Fundamentals II courses.

In this course, students use Oracle SQL Developer as the main development tool. SQL*Plus is available as an optional development tool.

This is appropriate for a 10g audience too. There are few minor changes between 10g and 11g features.

Learn to create reports of sorted and restricted data, run data manipulation statements (DML) to update data, control database access to specific objects, manage schema objects, manage objects with data dictionary views, and retrieve row and column data from tables.

Audience

- Application Developers
- Business Analysts
- Data Warehouse Administrator
- Developer
- Forms Developer
- PL/SQL Developer
- System Analysts

Suggested Prerequisites

- Familiarity with data processing concepts and techniques
- Data processing
Course Objectives

- Employ SQL functions to generate and retrieve customized data
- Display data from multiple tables using the ANSI SQL 99 JOIN syntax
- Identify the major structural components of the Oracle Database 11g
- Create reports of aggregated data
- Write SELECT statements that include queries
- Retrieve row and column data from tables with the SELECT statement
- Run data manipulation statements (DML) to update data in the Oracle Database 11g
- Create tables to store data
- Utilize views to display and retrieve data
- Control database access to specific objects
- Manage schema objects
- Manage objects with data dictionary views
- Write multiple-column sub-queries
- Use scalar and correlated sub-queries
- Use the regular expression support in SQL
- Create reports of sorted and restricted data

Course Topics

*Introducing Oracle Database 11g*

- List the features of Oracle Database 11g
- Discuss the basic design, theoretical and physical aspects of a relational database
- Categorize the different types of SQL statements
- Describe the data set used by the course
- Log onto the database using the SQL Developer environment
- Save queries to files and use script files in SQL Developer

*Retrieving Data Using the SQL SELECT Statement*

- List the capabilities of SQL SELECT statements
- Generate a report of data from the output of a basic SELECT statement
- Select All Columns
- Select Specific Columns
- Use Column Heading Defaults
- Use Arithmetic Operators
- Understand Operator Precedence
- Learn the DESCRIBE command to display the table structure

*Restricting and Sorting Data*

- Write queries that contain a WHERE clause to limit the output retrieved
- List the comparison operators and logical operators that are used in a WHERE clause
- Describe the rules of precedence for comparison and logical operators
- Use character string literals in the WHERE clause
- Write queries that contain an ORDER BY clause sort the output of a SELECT statement
- Sort output in descending and ascending order
Using Single-Row Functions to Customize Output

- Describe the differences between single row and multiple row functions
- Manipulate strings with character function in the SELECT and WHERE clauses
- Manipulate numbers with the ROUND, TRUNC and MOD functions
- Perform arithmetic with date data
- Manipulate dates with the date functions

Using Conversion Functions and Conditional Expressions

- Describe implicit and explicit data type conversion
- Use the TO_CHAR, TO_NUMBER, and TO_DATE conversion functions
- Nest multiple functions
- Apply the NVL, NULLIF, and COALESCE functions to data
- Use conditional IF THEN ELSE logic in a SELECT statement

Reporting Aggregated Data Using the Group Functions

- Use the aggregation functions in SELECT statements to produce meaningful reports
- Create queries that divide the data in groups by using the GROUP BY clause
- Create queries that exclude groups of data by using the HAVING clause

Displaying Data From Multiple Tables Using Joins

- Write SELECT statements to access data from more than one table
- View data that generally does not meet a join condition by using outer joins
- Join a table by using a self join

Using Sub-queries to Solve Queries

- Describe the types of problem that sub-queries can solve
- Define sub-queries
- List the types of sub-queries
- Write single-row and multiple-row sub-queries

Using the SET Operators

- Describe the SET operators
- Use a SET operator to combine multiple queries into a single query
- Control the order of rows returned when using the SET operators

Manipulating Data

- Describe each DML statement
- Insert rows into a table with the INSERT statement
- Use the UPDATE statement to change rows in a table
- Delete rows from a table with the DELETE statement
- Save and discard changes with the COMMIT and ROLLBACK statements
- Explain read consistency
Using DDL Statements to Create and Manage Tables

- Categorize the main database objects
- Review the table structure
- List the data types available for columns
- Create a simple table
- Decipher how constraints can be created at table creation
- Describe how schema objects work

Creating Other Schema Objects

- Create a simple and complex view
- Retrieve data from views
- Create, maintain, and use sequences
- Create and maintain indexes
- Create private and public synonyms

Controlling User Access

- Differentiate system privileges from object privileges
- Creating Users
- Granting System Privileges
- Creating and Granting Privileges to a Role
- Changing Your Password
- Granting Object Privileges
- Passing On Your Privileges
- Revoking Object Privileges

Managing Schema Objects

- Adding, Modifying and Dropping a Column
- Adding, Dropping and Deferring a Constraint
- Enabling and Disabling a Constraint
- Creating and Removing Indexes
- Creating a Function-Based Index
- Performing Flashback Operations
- Creating an External Table by Using ORACLE_LOADER and by Using ORACLE_DATAPUMP
- Querying External Tables

Managing Objects with Data Dictionary Views

- Explain the data dictionary
- Using the Dictionary Views
- USER_OBJECTS and ALL_OBJECTS Views
- Table and Column Information
- Querying the dictionary views for constraint information
- Querying the dictionary views for view, sequence, index and synonym information
- Adding a comment to a table
- Querying the dictionary views for comment information
Manipulating Large Data Sets

- Using Subqueries to Manipulate Data
- Retrieving Data Using a Subquery as Source
- Inserting Using a Subquery as a Target
- Using the WITH CHECK OPTION Keyword on DML Statements
- Types of Multitable INSERT Statements
- Using Multitable INSERT Statements
- Merging rows in a table
- Tracking Changes in Data over a period of time

Managing Data in Different Time Zones

- Time Zones
- CURRENT_DATE, CURRENT_TIMESTAMP, and LOCALTIMESTAMP
- Comparing Date and Time in a Session’s Time Zone
- DBTIMEZONE and SESSIONTIMEZONE
- Difference between DATE and TIMESTAMP
- INTERVAL Data Types
- Using EXTRACT, TZ_OFFSET and FROM_TZ
- Using TO_TIMESTAMP, TO_YMINTERVAL and TO_DSINTERVAL

Retrieving Data Using Sub-queries

- Multiple-Column Subqueries
- Pairwise and Nonpairwise Comparison
- Using Scalar Subquery Expressions
- Solving problems with Correlated Subqueries
- Updating and Deleting Rows Using Correlated Subqueries
- Using the EXISTS and NOT EXISTS operators
- Using the WITH clause
- Using the Recursive WITH clause

Regular Expression Support

- Using the Regular Expressions Functions and Conditions in SQL
- Using Meta Characters with Regular Expressions
- Performing a Basic Search using the REGEXP_LIKE function
- Finding patterns using the REGEXP_INSTR function
- Extracting Substrings using the REGEXP_SUBSTR function
- Replacing Patterns Using the REGEXP_REPLACE function
- Using Sub-Expressions with Regular Expression Support
- Using the REGEXP_COUNT function

If you have questions, contact:

Michael Burns, Senior Program Manager of Business and Information Technology
Lone Star College System
Michael.Burns@LoneStar.edu
281.290.2925