

# Oracle Database 12c R2: Introduction to SQL Ed 2

## Overview

**This Oracle Database: Introduction to SQL training helps you write subqueries, combine multiple queries into a single query using SET operators and report aggregated data using group functions. Learn this and more through hands-on exercises.**

### Learn To:

- Understand the basic concepts of relational databases ensure refined code by developers.
- Create reports of sorted and restricted data.
- Run data manipulation statements (DML).
- Control database access to specific objects.
- Manage schema objects.
- Manage objects with data dictionary views.
- Retrieve row and column data from tables.
- Control privileges at the object and system level.
- Create indexes and constraints; alter existing schema objects.
- Create and query external tables.

### Benefits to You:

Ensure fast, reliable, secure and easy to manage performance. Optimize database workloads, lower IT costs and deliver a higher quality of service by enabling consolidation onto database clouds.

### Learn Advanced Features of SQL:

This course will help you understand the advanced features of SQL. Learning these features will help you query and manipulate data within the database, use the dictionary views to retrieve metadata and create reports about their schema objects. Some of the date-time functions available in the Oracle Database are also covered.

### Use Development Tools:

The main development tool used in this training is Oracle SQL Developer. SQL\*Plus is available as an optional development tool. This is appropriate for a 10g and 11g audience.

**Please note:** This course is a combination of Oracle Database: SQL Workshop I and Oracle Database: SQL Workshop II courses.

## Delegates will learn how to

At the end of this course you will be able to:

- Identify the major structural components of the Oracle Database 12c
- Create reports of aggregated data
- Write SELECT statements that include queries
- Retrieve row and column data from tables
- Run data manipulation statements (DML) in Oracle Database 12c
- Create tables to store data
- Utilize views to display data
- Control database access to specific objects
- Manage schema objects
- Display data from multiple tables using the ANSI SQL 99 JOIN syntax
- Manage objects with data dictionary views

- Write multiple-column sub-queries
- Employ SQL functions to retrieve customized data
- Use scalar and correlated sub-queries
- Create reports of sorted and restricted data

## Course Outline

### Introduction to Oracle Database

- List the features of Oracle Database 12c
- 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 on to the database using SQL Developer environment
- Save queries to files and use script files in SQL Developer

### Retrieve 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

### Learn to Restrict and Sort 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 to sort the output of a SELECT statement
- Sort output in descending and ascending order

### Usage of 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

### Invoke 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

### Aggregate Data Using the Group Functions

- Use the aggregation functions to produce meaningful reports
- Divide the retrieved data in groups by using the GROUP BY clause
- Exclude groups of data by using the HAVING clause

### Display 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 to itself by using a self join

### Use 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

## **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

## **Data Manipulation Statements**

- Describe each DML statement
- Insert rows into a table
- Change rows in a table by the UPDATE statement
- Delete rows from a table with the DELETE statement
- Save and discard changes with the COMMIT and ROLLBACK statements
- Explain read consistency

## **Use of 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

## **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

## **Control User Access**

- Differentiate system privileges from object privileges
- Create Users
- Grant System Privileges
- Create and Grant Privileges to a Role
- Change Your Password
- Grant Object Privileges
- How to pass on privileges?
- Revoke Object Privileges

## **Management of Schema Objects**

- Add, Modify, and Drop a Column
- Add, Drop, and Defer a Constraint
- How to enable and Disable a Constraint?
- Create and Remove Indexes
- Create a Function-Based Index
- Perform Flashback Operations
- Create an External Table by Using ORACLE\_LOADER and by Using ORACLE\_DATAPUMP
- Query External Tables

## **Manage Objects with Data Dictionary Views**

- Explain the data dictionary
- Use the Dictionary Views
- USER\_OBJECTS and ALL\_OBJECTS Views
- Table and Column Information
- Query the dictionary views for constraint information
- Query the dictionary views for view, sequence, index and synonym information
- Add a comment to a table

- Query the dictionary views for comment information

## Manipulate Large Data Sets

- Use Subqueries to Manipulate Data
- Retrieve Data Using a Subquery as Source
- Insert Using a Subquery as a Target
- Usage of the WITH CHECK OPTION Keyword on DML Statements
- List the types of Multitable INSERT Statements
- Use Multitable INSERT Statements
- Merge rows in a table
- Track Changes in Data over a period of time

## Data Management in different Time Zones

- Time Zones
- CURRENT\_DATE, CURRENT\_TIMESTAMP, and LOCALTIMESTAMP
- Compare Date and Time in a Session's Time Zone
- DBTIMEZONE and SESSIONTIMEZONE
- Difference between DATE and TIMESTAMP
- INTERVAL Data Types
- Use EXTRACT, TZ\_OFFSET and FROM\_TZ
- Invoke TO\_TIMESTAMP, TO\_YMINTERVAL and TO\_DSINTERVAL

## Retrieve Data Using Sub-queries

- Multiple-Column Subqueries
- Pairwise and Nonpairwise Comparison
- Scalar Subquery Expressions
- Solve problems with Correlated Subqueries
- Update and Delete Rows Using Correlated Subqueries
- The EXISTS and NOT EXISTS operators
- Invoke the WITH clause
- The Recursive WITH clause

## Prerequisites

Required:

- Data processing
- Familiarity with data processing concepts and techniques

**Those delegates who are attending via either virtual or extended classroom will be required to provide either dual monitors or single monitor plus a tablet device.**

## Special Notices

**Please note that Oracle courses running at London training centres are subject to a 10% surcharge.**