Oracle Fundamentals

Curriculum	Oracle
Course Code	OFUN1
Duration	5 Day Course
Price	from £2,120

Course Description

This course is designed to give delegates practical experience in writing SQL statements and scripts using Oracle SQL. The basic SELECT statement, the use of SQL functions, SQL*Plus parameters and the basic table and view handling statements are introduced.

The course also provides practical experience in using Oracle's PL/SQL programming language to implement conditional execution, loop control, cursor handling and exception handling.

The delegate will practise:

- Using SQL*Plus and SQL Developer
- Creating SQL statements to query database tables
- Using standard aggregate functions and related SELECT statement clauses
- Implementing extended SQL functions
- Using SQL*Plus run time parameters
- Creating and altering tables and views
- Inserting, updating and deleting rows in database tables
- Retrieving information from the data dictionary
- Writing PL/SQL programs
- Declaring and using variables and constants
- Using the IF... THEN ... ELSE statement
- Implementing CASE expressions
- Implementing basic, WHILE and FOR loop constructs
- Handling implicit and explicit cursors
- Implementing the cursor FOR loop
- Handling system raised exceptions
- Defining and raising user defined exceptions
- Declaring and using record types and PL/SQL tables

Course Modules

Relational Database Concepts (6 topics)

- What is an Oracle Database
- Relational Database Structures
- Tables, Rows and Columns
- Indexes, Primary Keys and Foreign Keys
- Supported Datatypes
- The Data Dictionary

Using SQL*Plus (5 topics)

- What is SQL*Plus
- Getting Started
- Entering and Executing SQL Statements
- Editing SQL Statements
- Creating, Editing and Executing SQL Files

Using SQL Developer (5 topics)

- What is Oracle SQL Developer
- Starting SQL Developer
- Configure a Connection
- Navigation Tabs
- SQL Worksheet

Retrieving Data With The Select Statement (9 topics)

- The SELECT Statement
- The SELECT and FROM Clauses
- Conditions and the WHERE Clause
- Other Conditional Operators
- Logical Operators
- The ORDER BY Clause
- Column Aliases
- Arithmetic Expressions
- Precedence of Operators

Aggregate Functions (3 topics)

- Overview of Built In Aggregate Functions
- The GROUP BY Clause
- The HAVING Clause

Joining Tables (7 topics)

- Overview of Table Joins
- Inner Joins
- Table Aliases
- Outer Joins
- Self Joins
- ANSI Standard Joins
- Set Operators

Numeric, Character and Date Functions (6 topics)

- Function Types
- Using the Table dual to try out Functions
- Numeric Functions
- Character Functions
- String Concatenation
- Date Arithmetic and Date Functions

Conversion and Miscellaneous Functions (5 topics)

- Conversion Functions
- The NVL and NVL2 Functions
- The DECODE Function
- CASE Expressions
- The COALESCE and NULLIF Functions

SQL*Plus Parameters (3 topics)

- Command Line Substitution Parameters
- The Accept Command
- The Define and Undefine Commands

Using Subqueries (13 topics)

- Overview of Subqueries
- Use a Subquery as an Alternative to Join
- Handle Multiple Records in Subqueries
- Subquery in a Having Clause
- Anti-Join
- In-Line Views
- Top-N Queries
- Complex Subqueries
- Multi Column Subqueries
- Correlated Subqueries
- Subquery Rules
- Combining Unrelated Aggregates
- Using the ANY, ALL and SOME Operators

Managing Data (9 topics)

- Inserting Rows
- Updating Rows
- Deleting Rows
- Verifying Updates
- Transaction Control
- Commit and Rollback
- Savepoints
- Commits and Constraints
- Amending Data in SQL Developer

Managing Tables (5 topics)

- Creating Tables
- Specifying Constraints
- Altering Tables, Columns and Constraints
- Dropping Tables, Columns and Constraints
- Copying Tables

Managing Indexes and Views (6 topics)

- Creating Indexes
- Dropping Indexes
- Listing Indexes
- Creating and Using Views
- Dropping Views
- Listing Views

Managing Sequences and Synonyms (4 topics)

- Create a Sequence
- View Sequence Details
- Create a Synonym
- List Synonyms

PL/SQL Fundamentals (7 topics)

- What is PL/SQL?
- Basic Elements
- Variables and Constants
- Data Types
- Initialising Variables and Assigning Values
- Using SQL Statements in Code
- Generating Output to SQL or SQL Developer

Program Logic (7 topics)

- IF THEN ELSIF ELSE Statements
- CASE Statements
- The Basic Loop Construct
- WHILE and FOR Loops
- Nested and Labelled Loops
- The GOTO Statement
- The CONTINUE Statement

Using Cursors (9 topics)

- What is a Cursor?
- Implicit and Explicit Cursors
- Cursor Operations

- Declaring, Opening and Closing Cursors
- Fetching Rows
- Status Checking
- Using Cursors FOR UPDATE
- The Cursor FOR Loop
- Parameterised Cursors

Exceptions and Nested Blocks (10 topics)

- The EXCEPTION Section
- Types of Exception
- Handling Named System-Raised Exceptions
- Handling Un-named System-Raised Exceptions
- User-Declared Exceptions and Application Errors
- WHEN OTHERS THEN NULL
- Nested and Labelled Blocks
- Propagation of Exceptions
- Scope of Variables and Cursors
- Scope of Goto Statements

PL/SQL Records and Index-by Tables (6 topics)

- Declaring Record Types
- Handling PL/SQL Records
- Nested Records
- Declaring PL/SQL Index-By Tables or Associative Arrays
- PL/SQL Table Built-in Functions
- Manipulating PL/SQL Tables or Associative Arrays

Prerequisites

An understanding of databases and exposure to information technology in general would be useful