

## ORACLE PL/SQL SYLLABUS

- ❖ **Introduction to SQL**
- ❖ **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 Non-pairwise 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

### ❖ **Regular Expression Support**

- ❖ Use the Regular Expressions Functions and Conditions in SQL
- ❖ Use Meta Characters with Regular Expressions
- ❖ Perform a Basic Search using the REGEXP\_LIKE function
- ❖ Find patterns using the REGEXP\_INSTR function
- ❖ Extract Substrings using the REGEXP\_SUBSTR function
- ❖ Replace Patterns Using the REGEXP\_REPLACE function
- ❖ Usage of Sub-Expressions with Regular Expression Support
- ❖ Implement the REGEXP\_COUNT function

- ❖ **Oracle Database Program with PL/SQL**

- ❖ Introduction to PL/SQL
- ❖ Overview of PL/SQL
- ❖ Identify the benefits of PL/SQL Subprograms
- ❖ Overview of the types of PL/SQL blocks
- ❖ Create a Simple Anonymous Block
- ❖ How to generate output from a PL/SQL Block?

- ❖ **Declare PL/SQL Identifiers**

- ❖ List the different Types of Identifiers in a PL/SQL subprogram
- ❖ Usage of the Declarative Section to Define Identifiers
- ❖ Use variables to store data
- ❖ Identify Scalar Data Types
- ❖ The %TYPE Attribute
- ❖ What are Bind Variables?
- ❖ Sequences in PL/SQL Expressions

- ❖ **Write Executable Statements**

- ❖ Describe Basic PL/SQL Block Syntax Guidelines
- ❖ Learn to Comment the Code
- ❖ Deployment of SQL Functions in PL/SQL
- ❖ How to convert Data Types?
- ❖ Describe Nested Blocks
- ❖ Identify the Operators in PL/SQL

- ❖ **Interaction with the Oracle Server**

- ❖ Invoke SELECT Statements in PL/SQL
- ❖ Retrieve Data in PL/SQL
- ❖ SQL Cursor concept
- ❖ Avoid Errors by using Naming Conventions when using Retrieval and DML Statements
- ❖ Data Manipulation in the Server using PL/SQL
- ❖ Understand the SQL Cursor concept
- ❖ Use SQL Cursor Attributes to Obtain Feedback on DML
- ❖ Save and Discard Transactions

❖ **Control Structures**

- ❖ Conditional processing using IF Statements
- ❖ Conditional processing using CASE Statements
- ❖ Describe simple Loop Statement
- ❖ Describe While Loop Statement
- ❖ Describe For Loop Statement
- ❖ Use the Continue Statement

❖ **Composite Data Types**

- ❖ Use PL/SQL Records
- ❖ The %ROWTYPE Attribute
- ❖ Insert and Update with PL/SQL Records
- ❖ INDEX BY Tables
- ❖ Examine INDEX BY Table Methods
- ❖ Use INDEX BY Table of Records

❖ **Explicit Cursors**

- ❖ What are Explicit Cursors?
- ❖ Declare the Cursor
- ❖ Open the Cursor
- ❖ Fetch data from the Cursor
- ❖ Close the Cursor
- ❖ Cursor FOR loop
- ❖ The %NOTFOUND and %ROWCOUNT Attributes
- ❖ Describe the FOR UPDATE Clause and WHERE CURRENT Clause

❖ **Exception Handling**

- ❖ Understand Exceptions
- ❖ Handle Exceptions with PL/SQL
- ❖ Trap Predefined Oracle Server Errors
- ❖ Trap Non-Predefined Oracle Server Errors
- ❖ Trap User-Defined Exceptions
- ❖ Propagate Exceptions
- ❖ RAISE\_APPLICATION\_ERROR Procedure

❖ **Stored Procedures**

- ❖ Create a Modularized and Layered Subprogram Design
- ❖ Modularize Development With PL/SQL Blocks

- ❖ Understand the PL/SQL Execution Environment
- ❖ List the benefits of using PL/SQL Subprograms
- ❖ List the differences between Anonymous Blocks and Subprograms
- ❖ Create, Call, and Remove Stored Procedures
- ❖ Implement Procedures Parameters and Parameters Modes
- ❖ View Procedure Information
  
- ❖ **Design Considerations for PL/SQL Code**
- ❖ Standardize Constants and Exceptions
- ❖ Understand Local Subprograms
- ❖ Write Autonomous Transactions
- ❖ Implement the NOCOPY Compiler Hint
- ❖ Invoke the PARALLEL\_ENABLE Hint
- ❖ The Cross-Session PL/SQL Function Result Cache
- ❖ The DETERMINISTIC Clause with Functions
- ❖ Usage of Bulk Binding to Improve Performance
  
- ❖ **Triggers**
- ❖ Describe Triggers
- ❖ Identify the Trigger Event Types and Body
- ❖ Business Application Scenarios for Implementing Triggers
- ❖ Create DML Triggers using the CREATE TRIGGER Statement and SQL Developer
- ❖ Identify the Trigger Event Types, Body, and Firing(Timing)
- ❖ Differences between Statement Level Triggers and Row Level Triggers
- ❖ Create Instead of and Disabled Triggers
- ❖ How to Manage, Test and Remove Triggers?
  
- ❖ **Creating Compound, DDL, and Event Database Triggers**
- ❖ What are Compound Triggers?
- ❖ Identify the Timing-Point Sections of a Table Compound Trigger
- ❖ Understand the Compound Trigger Structure for Tables and Views
- ❖ Implement a Compound Trigger to Resolve the Mutating Table Error
- ❖ Comparison of Database Triggers to Stored Procedures
- ❖ Create Triggers on DDL Statements
- ❖ Create Database-Event and System-Events Triggers
- ❖ System Privileges Required to Manage Triggers
  
- ❖ **PL/SQL Compiler**

- ❖ What is the PL/SQL Compiler?
- ❖ Describe the Initialization Parameters for PL/SQL Compilation
- ❖ List the new PL/SQL Compile Time Warnings
- ❖ Overview of PL/SQL Compile Time Warnings for Subprograms
- ❖ List the benefits of Compiler Warnings
- ❖ List the PL/SQL Compile Time Warning Messages Categories
- ❖ Setting the Warning Messages Levels: Using SQL Developer, PLSQL\_WARNINGS Initialization Parameter and the DBMS\_WARNING Package Subprograms
- ❖ View Compiler Warnings: Using SQL Developer, SQL\*Plus, or the Data Dictionary Views
  
- ❖ **Manage Dependencies**
- ❖ Overview of Schema Object Dependencies
- ❖ Query Direct Object Dependencies using the USER\_DEPENDENCIES View
- ❖ Query an Object's Status
- ❖ Invalidation of Dependent Objects
- ❖ Display the Direct and Indirect Dependencies
- ❖ Fine-Grained Dependency Management in Oracle Database 12c
- ❖ Understand Remote Dependencies
- ❖ Recompile a PL/SQL Program Unit
  
- ❖ **Resume Preparation & Mock Interview**

THANK YOU..