

## **Oracle Training syllabus**

### **Introduction to DBMS**

- Approach to Data Management
- Introduction to prerequisites
- File and Filesystem
- Disadvantages of file
- Review of Database Management Terminology
- Database Models
- Hierarchal Model
- Network Model
- Relational Model

### **Introduction to RDBMS**

- Feature of RDBMS
- Advantages of RDBMS over FMS ad DBMS
- The 12 rules (E.F Codd's Rules –RDBMS)
- Need for Database Design
- Support of Normalization Process for Data Management
- Client-Server Technology
- Oracle Corporation Products
- Oracle Versions
- About SQL&SQL\*PLUS

### **Sub Language Commands**

- Data Definition Language (DDL)
- Data Retrieval Language (DRL)
- Data Manipulation Language (DML)
- Transaction Control Language (TCL)
- Database Security and Privileges (DCL)

### **Introduction to SQL Database Object**

- Oracle Pre Defined Datatypes
- DDL Commands
- Create, Alter (add, modify, rename, drop)Columns, Rename, truncate, drop
- DML-Insert, update, delete
- DQL-SELECT Statements using WHEREclause
- Comparison and Conditional Operators
- Arithmetic and Logical Operators
- Set Operators (UNION, UNION ALL, INTERSECT, MINUS)
- Special Operators – IN (NOT IN), BETWEEN (NOT BETWEEN), LIKE (NOT LIKE), IS NULL (IS NOT NULL)
- Working with DML, DRL Commands
- Operators Support

## **Built-in Functions**

- Arithmetic Functions, Character Functions, Date Functions, Conversion Functions
- Aggregate Functions, OLAP Functions & General Functions

## **Grouping the Result of a Query**

- Using Group by and Having Clause of DRL Statement
- Using Order by clause

## **Working with Integrity Constraints**

- Importance of Data Integrity
- Support of Integrity Constraints for Relating Table in RDBMS
- NOT NULL constraint
- UNIQUE constraint
- PRIMARY KEY constraint
- FOREIGN KEY constraint
- CHECK constraint
- Working with different types of Integrity Constraints

## **REF constraint**

- Understanding ON DELETE clause in referential integrity constraint
- Working with a composite constraint
- Applying DEFAULT option to columns
- Working with multiple constraints upon a column
- Adding constraints to a table
- Dropping of constraints
- Enabling / Disable constraints
- Querying for constraints information

## **Querying Multiple Tables (Joins)**

- Equi Join/Inner Join/Simple Join
- Cartesian Join
- Non-Equi Join
- Outer Joins
- Self Join

## **Working with Sub Queries**

- Understanding the practical approach to Sub Queries/Nested Select/Sub Select/Inner Select/Outer Select
- What is the purpose of a Sub Query?
- Sub Query Principle and Usage
- Type of Sub Queries
- Single Row
- Multiple Row
- Multiple Column
- Applying Group Functions in Sub Queries
- The impact of Having Clause in Sub Queries
- IN, ANY/SOME, ALL Operators in Sub Queries
- PAIRWISE and NON PAIRWISE Comparison in Sub Queries

- Be ... Aware of NULL's
- Correlated Sub Queries
- Handling Data Retrieval with EXISTS and NOT EXISTS Operators

### **Working with DCL, TCL Commands**

- Grant, Revoke
- Commit, Rollback, Savepoint
- SQL Editor Commands
- SQL Environment settings

### **Maintaining Database Objects**

#### **VIEWS in Oracle**

- Understanding the Standards of VIEWS in Oracle
- Types of VIEWS
- Relational Views
- Object Views
- Prerequisites to work with views
- Practical approach of SIMPLE VIEWS and COMPLEX VIEWS
- Column definitions in VIEWS
- Using VIEWS for DML Operations
- In-Line View
- Forced Views
- Putting CHECK Constraint upon VIEWS
- Creation of READ ONLY VIEWS
- Understanding the IN LINE VIEWS
- About Materialized Views
- View Triggers

### **Working with Sequences**

### **Working with Synonyms**

### **Working with Index and Clusters**

### **Creating Cluster Tables, Implementing Locks, working with roles**

#### **Pseudo Columns in Oracle**

- Understanding Pseudo Columns in Oracle
- Types of Pseudo Columns in Oracle
- CURRVAL and NEXTVAL
- LEVEL
- ROWID
- ROWNUM

### **Data Partitions and Parallel Process**

- Types of Partitions
- Range Partitions
- Hash Partitions
- List Partition

- Composite Partition
- Parallel Query Process

## **Locks**

- Row level Locks
- Table Level Locks
- Shared Lock
- Exclusive Lock
- Dead Lock

## **SQL \* Loader**

- SQL \* Loader Architecture
- Data file (Input Datafiles)
- Control file
- Bad file
- Discard file
- Log file
- .txt to base table
- .csv to base table
- From more than one file to single table

## **PL-SQL (Procedure Language – SQL)**

- Introduction to Programming Languages
- Introduction to PL/SQL
- The Advantages of PL/SQL
- PL/SQL Architecture
- PL/SQL Datatypes
- Variable and Constants
- Using Built\_in Functions
- Conditional and Unconditional Statements
- Simple if, if... else, nested if..else, if..else Ladder
- Selection Case, Simple Case, GOTO Label and EXIT
- Iterations in PL/SQL
- Simple LOOP, WHILE LOOP, FOR LOOP and NESTED LOOPS
- SQL within PL/SQL
- Composite Data types (Complete)
- Cursor Management in PL/SQL
- Implicit Cursors
- Explicit Cursors
- Cursor Attributes
- Cursor with Parameters
- Cursors with LOOPS Nested Cursors
- Cursors with Sub Queries
- Ref. Cursors
- Record and PL/SQL Table Types

## **Advanced PL/SQL**

- **Procedures in PL/SQL**
- STORED PROCEDURES
- PROCEDURE with Parameters (IN,OUT and IN OUT)
- POSITIONAL Notation and NAMED Notation

- Procedure with Cursors
- Dropping a Procedure
- **Functions in PL/SQL**
- Difference between Procedures and Functions
- User Defined Functions
- Nested Functions
- Using stored function in SQL statements
- Packages in PL/SQL
- Creating PACKAGE Specification and PACKAGE Body
- Private and Public Objects in PACKAGE

## **EXCEPTIONS in PL/SQL**

### **Types of exceptions**

- User-Defined Exceptions
- Pre Defined Exceptions
- RAISE\_APPLICATION\_ERROR
- PRAGMA\_AUTONOMOUS\_TRANSACTION
- SQL Error Code Values

## **Database Triggers in PL/SQL**

- Types of Triggers
- Row Level Triggers
- Statement Level Triggers
- DDL Triggers
- Trigger Auditing

## **File Input/Output**

- PL/SQL file I/O (Input/Output)
- Using UTL\_FILE Package

## **Implementing Object Technology**

- What is Object Technology ?
- OOPS-Object Instances
- Creation of objects
- Creating User-Defined Data Types
- Creating Object Tables
- Inserting rows in a table using Objects
- Retrieving data from Object-based Tables
- Calling a Method
- Indexing Abstract Data type Attributes

## **Using LOBS**

- Large Objects (LOBS)
- Creating Tables-LOB
- Working with LOB values
- Inserting, Updating & Deleting Values in LOBs
- Populating Lobis DBMS\_LOB Routines
- Using B-FILE

## Using Collections

- Advantages of collection
- Ref cursor (Dynamic Cursor)
- Weak ref cursor
- Strong ref cursor
- Nested Tables VARRAYS or VARYING arrays
- Creating tables using nested tables
- Inserting, updating & deleting Nested
- Table records
- Nested table in PL/SQL

## Oracle Database Architecture

- Introduction to Oracle Database Architecture
- Physical structures Logical structures
- DB Memory Structures Background Process
- 2 Tire, 3 Tire, N-Tier Architecture

## Advanced Features

- 9i Joines
- New Date function
- Rename column
- Inner Join/Natural Join
- Left Outer Join/Right Outer Join
- Full Outer Join
- Multiple Inserts
- Insert All Command
- Merge statement
- NVL2(), NULLIF(), COALESCE()
- CASE expression of Select Command
- Temporary Tables/Global Tables
- New Function EXTRACT()
- Autonomous Tracton
- Pragma \_ Autonomous\_ Transaction()
- Bulk Collect
- About Flash Back Queries
- Dynamic SQL
- New data types, Flash back Command
- Purge Command, Recyclebin
- Regular expressions, DML Error Logging
- Data Pump, Virtual Columns
- Read only tables, Cross tab Views using
- Pivot/Unpivot operators, Follows Clause
- Compound triggers, New data types

## DBA CONCEPTS

- Database
- Tablespace
- Types of Tablespaces
- Data files /Se