

# *Oracle 11g SQL & PL/SQL Course*

## **Introduction**

### **Introduction to DBMS**

- Database Fundamentals
- Introduction to Data Management
- File system concepts
- Database Models
  - Hierarchical Model
  - Network Model
  - Relational Model

### **Introduction to RDBMS**

- RDBMS concepts and features
- Advantages of RDBMS over FMS and DBMS
- E.F Codd's Rules, ACID properties
- Database design and Normalization process

### **Introduction to Computing Models**

- Computing Model concepts and Architecture
  - Centralized computing Model
  - De-Centralized computing Model
  - Distributed computing Model
    - File server, Client-Server
- Technology

### **Introduction to Oracle**

- History of Oracle
- Oracle products and features
- Oracle versions and releases
- About SQL & SQL\*PLUS
- SQL\*NET

## **SQL**

### **Introduction to SQL**

- Sublanguage Commands
  - Data Retrieval Language (DRL)
  - Data Definition Language (DDL)
  - Data Manipulation Language (DML)
  - Transaction Control Language (TCL)
- Database security and privileges

### **Working with DRL**

- Select statement
- Distinct Selection
- 'Where' Clause
- 'Order by' Clauses

### **Working with DDL and DML**

- DDL commands
- Database objects and object types
- Working with Tables
- Data Types
- Table partitions
- Create, Alter, Add, Modify, Drop
- Insert, Update, Delete
- Commit, Rollback

### **Oracle Built-in Functions**

- Arithmetic Functions
- Character Functions
- Date Functions
- Queries with Single Row Functions
- 'Group By' & 'Having' Clause
- Using ROLLUP and CUBE
- Misc Functions
- Working with Regular Expressions

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## **Constraints**

- Data Integrity Concepts
- Different types of Constraints
- Table Level and Column Level
- Composite Constraints
- Check Constraint and Restrictions
- Referential Integrity
- On Delete Cascade

## **Sub Queries**

- Normal Sub Queries.
- Co-related Sub Queries.
- Updating Using Co-Related.
- Deleting Co-Related
- Using Exists and Not Exists
- Inline Queries
- Miscellaneous Sub Queries.

## **Joins**

- Joining Tables
- Simple Joins
- Outer Joins
- Self Joins
- Joins with Inline Queries
- ANSI Join Syntaxes

## **Select Statement with Misc Options**

- Set Operators
- MERGE Statement
- Pseudo Columns
- Top N Analysis

## **Views, Synonyms & Indexes**

- Simple & Complex Views
- Modifying the View Query
- Limitation on Manipulations
- With Check Options

- Force View
- Synonyms
- Indexes
- Sequences

## **Data Controlling & Locks**

- Object Privileges
- With Grant option
- Locks overview
- Isolation Levels
- Dead Lock Concept

## **iSQL \* Plus**

## **Normalization Basics**

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## **PL-SQL**

### **Introduction to PL/SQL**

Back-end and Frond-end  
Role of PL/SQL in Applications  
Programming Fundamentals  
Restriction of SQL in PL/SQL  
PL/SQL Engine  
Working with PL/SQL Blocks  
Conditional Structure

### **Exception Handling**

System Defined Exceptions  
User Defined Exceptions  
Exception Propagation  
Defining Own Error Messages  
Program Exception Int  
SQLCODE,SQLERRM

### **Cursors**

Introduction to Cursors  
Types of Cursors  
For Cursor  
Cursor Attributes  
Working with Implicit and Explicit  
Cursors  
Dynamic Cursors

### **Stored Subprograms**

Introduction of Stored subprograms  
Working with Stored Procedures  
Overloading of Subprogram  
Limitations of Functions  
Understanding of Packages  
Type Spec & Body  
Package Instantiation  
Calling Packages & Procedures &  
Functions

### **Database Triggers**

Introduction to Triggers  
Statement Level Triggers  
Row Level Triggers  
When Clause  
Co-relations  
Trigger Predicates  
Insted of Triggers  
Compound Triggers  
Mutation of Triggers

### **Advance Data types**

Internal & External LOBs  
Manipulations of LOBs  
Working with DBMS\_LOB Package

### **Types & Collections**

Types & Objects  
Objects in Database  
PL/SQL Type Inheritance  
Type Evaluation  
Nested Tables and VArrays  
Collections in Database

### **Native Dynamic SQL**

Execute Immediate SQL  
Working with Bulk Dynamic SQL

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## **Advanced PL/ SQL**

File Input / Output  
PL/SQL files I/O  
Using Built-in Packages  
  UTL\_FILE  
  DBMS\_OUPUT.PUT\_LINE

## **Implementing Object Technology**

What is Object Technology?  
OOPS Features in Objects  
Creating of Objects  
Creating User Defined Data Types  
Creating Object Types  
Inserting row 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 with LOBs  
Working with LOB values  
Insert, Update, Delete in LOBs  
Populating LOBs using DBMS\_LOB  
Using B-File

## **Using Collections**

Advantages of collections  
Nested Tables, VARRYING arrays  
Creating tables using Nested Tables  
Insert, Update, Delete Nested tables  
Table Records  
Nested tables in PL/SQL

## **Java Objects and SQLJ**

Creating Java Objects  
Loading Java classed in to Database  
Diff. between Java with SQL and SQLJ  
Using DML, DDL in SQLJ

## **Advanced Features**

Returning into clause, Bulk Collect  
Bulk Bind  
Analytical functions, Multiple Inserts  
Merge Statement, Temporary Tables  
Autonomous Transactions  
Dynamic SQL  
Flash Back Command  
Purge, Recycle Bin  
Virtual columns  
Read only Tables  
Cross Tab Views using Pivot and Un-pivot Operators

## **Oracle Architecture & DBA Concepts**

Introduction to Oracle Architecture  
Physical & Logical structures  
Oracle Memory structures (SGA, PGA)  
Oracle Background Process  
Backup & Recovery Concepts  
Oracle Utilities

## **Oracle DBA Role and Responsibilities on Production & Development Environment.**