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Oracle & PLSql Syllabus

By **A1Training(PT)**

Course Name	Oracle & PLSql
Category	Database
Mode Of Classes	Online/Offline
Demo Classes	At Your Convenience
Training Methodology	20% Theory & 80% Practical
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Oracle Syllabus

SQL

Writing Basic SQL SELECT Statements

- ✔ Basic SELECT Statement
- ✔ Selecting All Columns
- ✔ Selecting Specific Columns
- ✔ Writing SQL Statements
- ✔ Column Heading Defaults
- ✔ Arithmetic Expressions
- ✔ Using Arithmetic Operators
- ✔ Operator Precedence
- ✔ Using Parentheses
- ✔ Defining a Null Value
- ✔ Null Values in Arithmetic Expressions
- ✔ Defining a Column Alias
- ✔ Using Column Aliases
- ✔ Concatenation Operator
- ✔ Using the Concatenation Operator
- ✔ Literal Character Strings
- ✔ Using Literal Character Strings
- ✔ Duplicate Rows
- ✔ Eliminating Duplicate Rows

Restricting and Sorting Data

- ✔ Limiting Rows Using a Selection
- ✔ Limiting the Rows Selected
- ✔ Using the WHERE Clause
- ✔ Character Strings and Dates
- ✔ Comparison Conditions
- ✔ Using Comparison Conditions
- ✔ Other Comparison Conditions
- ✔ Using the BETWEEN Condition
- ✔ Using the IN Condition
- ✔ Using the LIKE Condition
- ✔ Using the NULL Conditions
- ✔ Logical Conditions
- ✔ Using the AND Operator
- ✔ Using the OR Operator
- ✔ Using the NOT Operator
- ✔ Rules of Precedence
- ✔ ORDER BY Clause
- ✔ Sorting in Descending Order
- ✔ Sorting by Column Alias
- ✔ Sorting by Multiple Columns

Single-Row Functions

- SQL Function
- Two Types of SQL Functions
- Single-Row Functions
- Single-Row Functions
- Character Functions
- Character Functions
- Case Manipulation Functions
- Using Case Manipulation Functions
- Character-Manipulation Functions
- Using the Character-Manipulation Functions
- Number Functions
- Using the ROUND Function
- Using the TRUNC Function
- Using the MOD Function
- Working with Dates
- Arithmetic with Dates
- Using Arithmetic Operators with Dates
- Date Functions
- Using Date Functions
- Practice 3, Part One:
- Conversion Functions
- Implicit Data Type Conversion
- Explicit Data Type Conversion
- Using the TO_CHAR Function with Dates
- Elements of the Date Format Model
- Using the TO_CHAR Function with Dates
- Using the TO_CHAR Function with Numbers
- Using the TO_NUMBER and TO_DATE Functions
- RR Date Format
- Example of RR Date Format
- Nesting Functions
- General Functions
- NVL Function
- Using the NVL Function
- Using the NVL2 Function
- Using the NULLIF Function
- Using the COALESCE Function
- Conditional Expressions
- The CASE Expression
- Using the CASE Expression
- The DECODE Function
- Using the DECODE Function

Displaying Data from Multiple Tables

- Obtaining Data from Multiple Tables
- Cartesian Products
- Generating a Cartesian Product
- Types of Joins
- Joining Tables Using Oracle Syntax
- What is an Equijoin?
- Retrieving Records with Equijoins

- Additional Search Conditions Using the AND Operator
- Qualifying Ambiguous Column Names
- Using Table Aliases
- Joining More than Two Tables
- Non-Equijoins
- Retrieving Records with Non-Equijoins
- Outer Joins Outer Joins Syntax
- Using Outer Joins
- Self Joins
- Joining a Table to Itself
- Joining Tables Using SQL: 1999 Syntax
- Creating Cross Joins
- Creating Natural Joins
- Retrieving Records with Natural Joins
- Creating Joins with the USING Clause
- Retrieving Records with the USING Clause
- Creating Joins with the ON Clause
- Retrieving Records with the ON Clause
- Creating Three-Way Joins with the ON Clause
- INNER Versus OUTER Joins
- LEFT OUTER JOIN
- RIGHT OUTER JOIN
- FULL OUTER JOIN
- Additional Conditions

Aggregating Data Using Group Functions

- What Are Group Functions?
- Types of Group Functions
- Group Functions Syntax
- Using the AVG and SUM Functions
- Using the MIN and MAX Functions
- Using the COUNT Function
- Using the DISTINCT Keyword
- Group Functions and Null Values
- Using the NVL Function with Group Functions
- Creating Groups of Data
- Creating Groups of Data: The GROUP BY Clause Syntax
- Using the GROUP BY Clause
- Grouping by More Than One Column
- Using the GROUP BY Clause on Multiple Columns
- Illegal Queries Using Group Functions
- Excluding Group Results
- Excluding Group Results: The HAVING Clause
- Using the HAVING Clause
- Nesting Group Functions

Subqueries

- Objectives
- Using a Subquery to Solve a Problem
- Subquery Syntax
- Using a Subquery

- Guidelines for Using Subqueries
- Types of Subqueries
- Single-Row Subqueries
- Executing Single-Row Subqueries
- Using Group Functions in a Subquery
- The HAVING Clause with Subqueries
- What is Wrong with this Statement?
- Will this Statement Return Rows?
- Multiple-Row Subqueries
- Using the ANY Operator in Multiple-Row Subqueries
- Using the ALL Operator in Multiple-Row Subqueries
- Null Values in a Subquery

Manipulating Data

- Data Manipulation Language
- Adding a New Row to a Table
- The INSERT Statement Syntax 8-5
- Inserting New Rows
- Inserting Rows with Null Values
- Inserting Special Values
- Inserting Specific Date Values
- Creating a Script
- Copying Rows from Another Table
- Changing Data in a Table
- The UPDATE Statement Syntax
- Updating Rows in a Table
- Updating Two Columns with a Subquery
- Updating Rows Based on Another Table
- Updating Rows: Integrity Constraint Error
- Removing a Row from a Table
- The DELETE Statement
- Deleting Rows from a Table
- Deleting Rows Based on Another Table
- Deleting Rows: Integrity Constraint Error
- Using a Subquery in an INSERT Statement
- Using the WITH CHECK OPTION Keyword on DML Statements
- Overview of the Explicit Default Feature
- Using Explicit Default Values
- The MERGE Statement
- The MERGE Statement Syntax
- Merging Rows
- Database Transactions
- Advantages of COMMIT and ROLLBACK Statements
- Controlling Transactions
- Rolling Back Changes to a Marker
- Implicit Transaction Processing
- State of the Data Before COMMIT or ROLLBACK
- State of the Data after COMMIT
- Committing Data
- State of the Data After ROLLBACK
- Statement-Level Rollback
- Read Consistency

- Implementation of Read Consistency
- Locking
- Implicit Locking
- Read Consistency Example

Creating and Managing Tables

- Database Objects
- Naming Rules
- The CREATE TABLE Statement
- Referencing Another User?s Tables
- The DEFAULT Option
- Creating Tables
- Tables in the Oracle Database
- Querying the Data Dictionary 9-10
- Data Types
- DateTime Data Types
- TIMESTAMP WITH TIME ZONE Data Type
- TIMESTAMP WITH LOCAL TIME Data Type
- INTERVAL YEAR TO MONTH Data Type
- INTERVAL DAY TO SECOND Data Type
- Creating a Table by Using a Subquery Syntax
- Creating a Table by Using a Subquery
- The ALTER TABLE Statement
- Adding a Column
- Modifying a Column
- Dropping a Column
- The SET UNUSED Option
- Dropping a Table
- Changing the Name of an Object
- Truncating a Table
- Adding Comments to a Table

Including Constraints

- What are Constraints?
- Constraint Guidelines
- Defining Constraints
- The NOT NULL Constraint
- The UNIQUE Constraint
- The PRIMARY KEY Constraint
- The FOREIGN KEY Constraint
- FOREIGN KEY Constraint Keywords
- The CHECK Constraint
- Adding a Constraint Syntax
- Adding a Constraint
- Dropping a Constraint
- Disabling Constraints
- Enabling Constraints
- Cascading Constraints
- Viewing Constraints
- Viewing the Columns Associated with Constraints

Creating Views

- Database Objects
- What is a View?
- Why use Views?
- Simple Views and Complex Views
- Creating a View
- Retrieving Data from a View
- Querying a View
- Modifying a View
- Creating a Complex View
- Rules for Performing DML Operations on a View
- Using the WITH CHECK OPTION Clause
- Denying DML Operations
- Removing a View
- Inline Views
- Top-N Analysis
- Performing Top-N Analysis
- Example of Top-N Analysis

Other Database Objects

- Database Objects
- What is a Sequence?
- The CREATE SEQUENCE Statement Syntax
- Creating a Sequence
- Confirming Sequences
- NEXTVAL and CURRVAL Pseudocolumns
- Using a Sequence
- Modifying a Sequence
- Guidelines for Modifying a Sequence
- Removing a Sequence
- What is an Index?
- How Are Indexes Created?
- Creating an Index
- When to Create an Index
- When Not to Create an Index
- Confirming Indexes
- Function-Based Indexes
- Removing an Index
- Creating and Removing Synonyms

Controlling User Access

- Objectives
- Controlling User Access
- Privileges
- System Privileges
- Creating Users
- User System Privileges
- Granting System Privileges
- What is a Role?
- Creating and Granting Privileges to a Role

- Changing Your Password
- Object Privileges
- Granting Object Privileges
- Using the WITH GRANT OPTION and PUBLIC Keywords
- Confirming Privileges Granted
- How to Revoke Object Privileges
- Revoking Object Privileges
- Database Links

SQL Workshop

- Workshop Overview

Using SET Operators

- The SET Operators
- Tables Used in This Lesson
- The UNION Operator
- Using the UNION Operator
- The UNION ALL Operator
- Using the UNION ALL Operator
- The INTERSECT Operator
- Using the INTERSECT Operator
- The MINUS Operator
- SET Operator Guidelines
- The Oracle Server and SET Operators
- Matching the SELECT Statements
- Controlling the Order of Rows

Enhancements to the GROUP BY Clause

- Review of Group Functions
- Review of the GROUP BY Clause
- Review of the HAVING Clause
- GROUP BY with ROLLUP and CUBE Operators
- ROLLUP Operator
- ROLLUP Operator Example
- CUBE Operator
- CUBE Operator: Example
- GROUPING Function
- GROUPING Function: Example
- GROUPING SETS
- GROUPING SETS: Example
- Composite Columns
- Composite Columns: Example
- Concatenated Groupings
- Concatenated Groupings Example

Advanced Subqueries

- What Is a Subquery?
- Subqueries
- Using a Subquery

- Multiple-Column Subqueries
- Column Comparisons
- Pairwise Comparison Subquery
- Nonpairwise Comparison Subquery
- Using a Subquery in the FROM Clause
- Scalar Subquery Expressions
- Scalar Subqueries: Examples
- Correlated Subqueries
- Using Correlated Subqueries
- Using the EXISTS Operator
- Using the NOT EXISTS Operator
- Correlated UPDATE
- Correlated DELETE
- The WITH Clause
- WITH Clause: Example

Hierarchical Retrieval

- Sample Data from the EMPLOYEES Table
- Natural Tree Structure
- Hierarchical Queries
- Walking the Tree
- Walking the Tree: From the Bottom Up
- Walking the Tree: From the Top Down
- Ranking Rows with the LEVEL Pseudocolumn
- Formatting Hierarchical Reports Using LEVEL and LPAD
- Pruning Branches

Extensions to DML and DDL Statements

- Review of the INSERT Statement
- Review of the UPDATE Statement
- Overview of Multitable INSERT Statements
- Overview of Multitable INSERT Statements
- Types of Multitable INSERT Statements
- Multitable INSERT Statements
- Unconditional INSERT ALL
- Conditional INSERT ALL
- Conditional FIRST INSERT
- Pivoting INSERT
- External Tables
- Creating an External Table
- Example of Creating an External Table
- Querying External Tables
- CREATE INDEX with CREATE TABLE Statement

Plsql syllabus

Part I: Programming in PL/SQL

- Introduction to PL/SQL

- What Is PL/SQL?
- The Origins of PL/SQL
- About PL/SQL Versions
- Resources for PL/SQL Developers

Creating and Running PL/SQL Code

- SQL*Plus
- Performing Essential PL/SQL Tasks
- Calling PL/SQL from Other Languages
- Language Fundamentals
- PL/SQL Block Structure
- The PL/SQL Character Set
- Identifiers
- Literals
- The Semicolon Delimiter
- Comments
- The PRAGMA Keyword
- Labels

Part II: PL/SQL Program Structure

- Conditional and Sequential Control
- IF Statements
- CASE Statements and Expressions
- The GOTO Statement
- The NULL Statement
- Iterative Processing with Loops

Loop Basics

- The Simple Loop
- The WHILE Loop
- The Numeric FOR Loop
- The Cursor FOR Loop
- Loop Labels
- Tips for Iterative Processing

Exception Handlers

- Exception-Handling Concepts and Terminology
- Defining Exceptions
- Raising Exceptions
- Handling Exceptions
- Building an Effective Error Management Architecture
- Making the Most of PL/SQL Error Management

Part III: PL/SQL Program Data

- Working with Program Data
- Naming Your Program Data
- Overview of PL/SQL Datatypes
- Declaring Program Data

- Programmer-Defined Subtypes
- Conversion Between Datatypes

Strings

- String Datatypes
- Working with Strings
- String Function Quick Reference

Numbers

- Numeric Datatypes
- Number Conversions
- Numeric Functions

Records

- Records in PL/SQL

Collections

- Collections Overview
- Collection Methods (Built-Ins)
- Working with Collections
- Nested Table Multiset Operations
- Maintaining Schema-Level Collections

Miscellaneous Datatypes

- The BOOLEAN Datatype
- The RAW Datatype
- The UROWID and ROWID Datatypes
- The LOB Datatypes
- Working with LOBs
- Predefined Object Types

Part IV: SQL in PL/SQL

- DML and Transaction Management
- DML in PL/SQL
- Bulk DML with the FORALL Statement
- Transaction Management
- Autonomous Transactions

Data Retrieval

- Cursor Basics
- Working with Implicit Cursors
- Working with Explicit Cursors
- BULK COLLECT
- SELECT ... FOR UPDATE
- Cursor Variables and REF CURSORs
- Cursor Expressions

Procedures, Functions, and Parameters

- ✔ Procedures
- ✔ Functions
- ✔ Parameters
- ✔ Local Modules
- ✔ Module Overloading
- ✔ Forward Declarations
- ✔ Advanced Topics
- ✔ Go Forth and Modularize!

Packages

- ✔ Why Packages?
- ✔ Rules for Building Packages
- ✔ Rules for Calling Packaged Elements
- ✔ Working with Package Data
- ✔ When to Use Packages
- ✔ Packages and Object Types

Triggers

- ✔ DML Triggers
- ✔ DDL Triggers
- ✔ Database Event Triggers
- ✔ INSTEAD OF Triggers
- ✔ AFTER SUSPEND Triggers
- ✔ Maintaining Triggers

Managing PL/SQL Code

- ✔ Managing Code in the Database
- ✔ Using Native Compilation
- ✔ Using the Optimizing Compiler and Compile-Time Warnings
- ✔ Conditional Compilation
- ✔ Testing PL/SQL Programs
- ✔ Debugging PL/SQL Programs
- ✔ Tuning PL/SQL Programs
- ✔ Protecting Stored Code

I/O and PL/SQL

- ✔ Displaying Information
- ✔ Reading and Writing Files
- ✔ Sending Email
- ✔ Working with Web-Based Data (HTTP)
- ✔ Other Types of I/O Available in PL/SQL

Oracle Forms

Oracle Forms Developer 10g: Build Internet Applications

- Introducing Oracle Forms Developer and Forms Services
- Grid Computing
- Oracle 10g Products
- Oracle Application Server 10g Architecture
- Benefits and Components of Oracle Developer Suite 10g
- Running a Forms Developer Application
- Working in the Forms Developer Environment
- Creating Forms Modules
- Working with Data Blocks and Frames
- Working with Input Items
- Working with Non Input Items
- Working with Windows and Canvases
- Producing Triggers
- Debugging Triggers
- Adding Functionality to Items
- Run-Time Messages and Alerts
- Query Triggers
- Validation
- Navigation
- Transaction Processing
- Sharing Objects and Code
- Using WebUtil to Interact with the Client
- Introducing Multiple Form Applications

Oracle Reports

Oracle Reports Developer 10g: Build Reports

- Introduction to Oracle Reports Developer
- Business Intelligence
- Enterprise Reporting
- Oracle Reports Developer
- Oracle Database 10g
- Oracle Developer Suite 10g
- Oracle Application Server 10g
- OracleAS Reports Services
- OracleAS Reports Services Architecture for the Web
- Designing and Running Reports
- Exploring Oracle Reports Developer
- Creating a Paper Report
- Enhancing a Basic Paper Report
- Managing Report Templates
- Creating a Web Report
- Enhancing Reports Using the Data Model: Queries and Groups
- Enhancing Reports Using the Data Model: Data Sources
- Enhancing Reports Using the Data Model: Creating Columns
- Enhancing Reports Using the Paper Layout
- Controlling the Paper Layout: Common Properties
- Controlling the Paper Layout: Specific Properties
- Web Reporting
- Extending Functionality Using XML

- ✔ Creating and Using Report Parameters
- ✔ Embedding a Graph in a Report
- ✔ Enhancing Matrix Reports
- ✔ Coding PL/SQL Triggers
- ✔ Extending Functionality Using the SRW Package
- ✔ Maximizing Performance Using
- ✔ OracleAS Reports Services
- ✔ Building Reports: Efficiency Guidelines
- ✔ Working with SQL Worksheet
- ✔ Using SQL Developer