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CHAPTER 1 : INTRODUCTION TO DBMS

What is Data and Information?; Purpose of Data Management; File and File System For Data Storage; Disadvantages of File Data Management; Database : Purpose, Basic Terminology; Advantages of Database for Data Storage; Possible Operations on the Database; Database Models – Hierarchical Model; Network Model and Relational Model; Introduction to DBMS; Introduction to RDBMS; Database Design; Most Popular RDBMS Products; History, Real-time Database Examples (LIVE)

CHAPTER 2: ORACLE INSTALLATION

Oracle 2018 Installation Guidance; Oracle 2012 Installation ; Installation Pre-Requisites and Precautions; Oracle Sql Developer; Oracle Sql Command prompt; Oracle Versions and Editions Comparisions ; Connect Sql Developer Tool; Creating a new User ; Grant permission; Lock and Unlock User Account; How to Reset User Account Password; SQL* Plus; How to Establish the Oracle Connection; Default System user in Oracle; Default Sysdba user in Oracle

CHAPTER 3: INTRODUCTION TO RDBMS

Features of RDBMS; Advantages of RDBMS; E.F Codd Rules for RDBMS; Normalization Concepts & Process; Client Server Communication; Oracle Corporation Products; RDBMS from Other Vendors: Microsoft, IBM, etc; Oracle Versions about SQL & SQL*PLUS; Database Types: OLTP and OLAP Databases; Real-world Advantage of OLTP & OLAP; Why a database is called as Relational Database

Model; Database Entites and Attributes; Applicative use of RDBMS Databases

CHAPTER 4 : SQL LANGUAGE COMMANDS

Structured Query Language (SQL) Basics; What is SQL?; What Can SQL do?; Possible Operations with SQL; Data Definition Language (DDL); Data Retrieval Language (DRL); Data Manipulation Language (DML); Transaction Control Language (TCL); Database Security and Privileges (DCL); Rules of SQL Queries and Statements; Real-world applicative uses of SQL; Creating Users and Tables; Table Data Inserts and Validations; Oracle Data Types; DDL Commands with Examples; CREATE, ALTER, TRUNCATE,DROP,RENAME; Learn the DESCRIBE command to display the table structure; DML Command DRL Commands Operators; INSERT, UPDATE, DELETE Statements; Difference between Truncate and Delete commands; SELECT Statements with Multiplier; SQL Comments; Single Line Comments & Multi Line Comments; WHERE Keyword for Query Conditions

CHAPTER 5 : SQL SPECIAL OPERATORS

SET, AND, OR, NOT, IN; Special Operators – IN (NOT IN); BETWEEN (NOT BETWEEN); Arithmetic and Logical Operators; Understand Operator Precedence; UNION, UNION ALL, INTERSECT, MINUS; LIKE (NOT LIKE), IS NULL (IS NOT NULL); Understanding DCL and TCL Commands; Transaction Concepts in Databases with SQL; Transaction Types and Uses; Commit and Rollback Operations; Nested Transactions with Savepoints; Database Read Consistency with SQL; DDL and DML Operations with Transactions

CHAPTER 6: GROUPING QUERY RESULTS

Identify Distinct Values in Tables; Group Function or Aggregate function ; Group By Syntax; Group By Operations in Queries; Having Clause of DRL Statements; Aggregate Functions with Group By; Order By Clause and Group By; SQL Group By Statement; Query Execution Order with Group By; Arithmetic Functions, Character Function; Date & Time Functions, String Function; Conversion Functions, Analytical Function; Rank(), Dense_Rank(),Row_Number(); NVL(),NVL2(), NullIF(),Coalesce();

CHAPTER 7 : CONSTRAINTS & KEYS

Importance of Data Integrity; Working with Integrity constraints; Types of Integrity Constraints; Domain Integrity Constraint and Usage; Entity Integrity Constraints and Usage; Referential Integrity Constraint and Usage; Check Constraints and Usage; NOT NULL Constraint, UNIQUE Constraint; PRIMARY KEY Constraint and Usage; FOREIGN KEY Constraints and Relations; Column Level & Table Level Constraints; Adding Constraints to Tables, User Constraints ; Enabling - Dropping Constraints; Disabling Constraints on Tables; Querying for Constraints Information, Self Referential Key

CHAPTER 8 : QUERIES & JOINS

Need for Joins and Table Comparisons; SET Operations on Tables and Joins; Join Types : Equi Join, Simple Join; Inner Join and Query Conditions; Cross Join (Cartesian Join), Conditions; Join syntax - Sql syntax and Ansi Syntax; Non-Equi Join and Self Join; Outer Joins – Types, Advantages and Usage; Cross Joins – Advantages and Limitations; Self Joins, Merge Joins and Sub Queries; Using Aliases in Joins and Conditions; Using Inner Self Joins with HAVING; JOINS and GROUP BY Queries

CHAPTER 9 : VIEWS, SYNONYMS,SEQUENCES

VIEWS IN ORACLE, Understanding Views & Use; Relational Views and Standard Views; SIMPLE VIEWS and COMPLEX VIEWS in PLSQL; Column Definitions in VIEWS; Using VIEWS for DML Operations; Forced Views, CHECK Constraints in Views; Creation of READ ONLY VIEWS - Realtime Use; TOP-N Analysis, (Indexed) Materialized Views; SequenWorking ces, with Synonyms; What is the Use of Synonym in Oracle?; Difference between View and Synonym in Oracle; When should Table Synonyms be used?; Public Synonym and Private Synonyms; All_Synonyms and Dba_Synonyms System Tables; Creating Index Tables – Purpose

CHAPTER 10 : SUB QUERIES, NESTED QUERIES

Sub Queries in Real-world; Dynamic Conditions with Sub Queries; Sub Queries and Nested Sub Queries; How does oracle Execute Nested Sub Queries?; Inner Select and Outer Select Queries; Usage of Sub Queries with WHERE, HAVING; Impact of Having Clause in Sub Queries; Select Nth Highest salary ; Select Duplicate Records; Delete Duplicate Records; Advantages of Oracle Sub Query; Subquery in the Select Clause Examples; Subquery in the From Clause Examples; Display Odd Rows in a table; Display Even Rows in a table; Execution of Correlated Sub Queries in SQL; IN, ANY SOME, ALL Operators in Sub Queries; PAIR WISE and NON PAIR WISE in Sub Queries; Single Row Subquery & Multiple Row Subquery; Multiple Column Subquery; UnCorrelated Subquery; Difference between Correlated and Non-Correlated Subquery; How does Oracle Execute Correlated Subquery?; NULLs and Correlated Sub Queries in SQL

CHAPTER 11: LOCKS in ORACLE TABLES

Open Transactions and Lock Concepts; Lock Types and Locking Mechanism; Row Level Locks for Table Data Access; Table Level Locks and Query Blocking; Shared Lock and Real-time Use; Shared Update Lock and Real-time Use; Exclusive Lock and Real-time Use; DeadLock : Detection, Prevention, Avoidance; Implicit Locking Concepts in Oracle with PLSQL; How to check howmany locks are occured?; LOCK Hints and Query Blocking; What is row exclusive lock in Oracle?; What is lock in SQL?; What are different types of locks?

CHAPTER 12 : PERFORMANCE (QUERY) TUNING

Indexes - Definition and Architecture; B Tree Concept in Indexes; Clustered and Non clustered Indexes; Primary Key and Clustered Index; Unique Key and Non Clustered Indexes; Simple Index, Rebuild Index; Materialized Views - Indexed Views; Composite Index, Function Based Index; User_indexes System Table; Range Partitions and Hash Partition; Partion “VALUES LESS THAN “ Clause; List Partition and Composite Partition; Parallel Query Process with Partitions; Performance Tuning Advantages

CHAPTER 13 : PL/SQL – (CONTROL STRUCTURE) - Level I

Simple If, If..Else. Nested If..Else Statements; Ladder, Selection, Simple Case Statements; GOTO Label and EXIT Statements in PL/SQL; Iterations in PL/SQL, Simple LOOP, WHILE; FOR LOOP and NESTED LOOPS in PLSQL; PL/SQL Select statements; SQL within PL/SQL, Composite Data Types; Cursor Variables and with Sub Queries, Reference Cursors; Implicit Cursors, Explicit Cursor; Parameterized Cursors, Ref Cursors; REF Cursors Management in PL/SQL; Implicit & Explicit Cursors and Attributes; Cursor with Parameters and Nested LOOPs; REF Cursors

CHAPTER 14: ADVANCED PL/SQL - 1

Procedures in PL/SQL: STORED PROCEDURE; PROCEDURES @ Parameters (IN, OUT, IN OUT); POSITIONAL Notation and NAMED Notation; Procedure with Cursors and Sub Queries; ALTER and DROP of Stored Procedures; Functions in PL/SQL: Real-time Usage; User Defined Functions, Nested Functions; Using Functions in SQL Statements; Working with Procedures and Functions; Comparing Stored Procedures and Functions; Using SPs with Table Value Functions; Using SPs for Dynamic SQL Statements; Loops and Table Variables in SQL Programs ; Merge, NVL2(), NULLIF(), COALESCE(); CASE & Temporary /Global Tables

CHAPTER 15 : ADVANCED PL/SQL - 2

Cross Tab Views using Pivot/Unpivot Operators; Follows Clause and READONLY Tables; IN-LINE VIEWS. Manipulations with Triggers; Purity Levels in Oracle - with Examples; User_Source Dictionary Table Packages; Creating PACKAGE Specifications with PLSQL; PACKAGE Body - Examples with Big Data Tables; Private and Public Objects in PACKAGE; Types of Exceptions: User Defined Exceptions; EXCEPTIONS in PL/SQL with Real-time; Event Handling and Error Handling Techniques; Important Error Code Values in PL/SQL; RAISE_APPLICATION_ERROR Procedure

CHAPTER 16 : ADVANCED PL/SQL - 3

Pragma_Autonomous_Transaction() with SPs; Returning into clause, Bulk Collect; For All, Definer/Invoker Rights & Usage; About Flash Back Queries, Dynamic SQL; Flash Back Command, Purge Command; Regular Expressions in PLSQL; What is the Recycle Bin?; How to Delete RecycleBin Table?; How to Delete Recycle Bin?; SQL Loader - Flat file into Oracle table; Abstract Datatypes; DML Error Logging and Virtual Columns; Types of Triggers, Row Level Triggers; Statement Level Triggers, DML Triggers; DDL Triggers and Schema Level Triggers; Using OLD & NEW References, Trigger Auditing; Enabling / Disabling Triggers, Dropping Triggers; Triggers in PL/SQL and Data Manipulations; Using Memory Tables in Triggers; DML and DDL Events with Triggers; Compound Triggers, New data types; Working with LARGE Tables in PLSQL; New: EXTRACT(), Autonomous Transaction; Pragma Exception_init in oracle

CHAPTER 17: IMPLEMENTING OBJECT TECHNOLOGY – Level I

Object Technology and Applicative Use; OOPS-Object Instances, Creation of Objects; Creating User Defined Data Types; Creating Object Tables in Oracle; Inserting rows in Table using Object; Retrieving data from Object Based Tables; Calling a Method, Indexing Abstract; Data type Attributes in PLSQL; Advantages of Collections; Ref Cursor (Dynamic Cursor), Weak Ref Cursor; Strong Ref Cursors and Nested Tables; Associative Arrays, VARRAYS/VARYING arrays; Creating tables using Nested Tables; Inserting, Updating & Deleting; Nested, Table Records

CHAPTER 18: IMPLEMENTING OBJECT TECHNOLOGY – Level II

Perform a Basic Search using the REGEXP_LIKE function; patterns using the REGEXP_INSTR function; Extract Substrings using the REGEXP_SUBSTR function; Replace Patterns Using the REGEXP_REPLACE ; Invisible Columns in Oracle Database 12c ; What is fetch in SQL?; Can we use limit in Oracle?; What is offset in Oracle?; Is PL SQL object oriented?; What is Oracle object type?; What is object type in Oracle PL SQL?; Is Oracle object oriented database?; What is PL SQL in Oracle?; What is Oracle constructor?