Database Technology Training   Duration: 48 Hrs.

Database Concepts

- RDBMS Concepts
- Comparison between traditional file and DBMS
- Characteristics of data in database
- Components of database system environment
- Functions of DBMS
- Advantages and disadvantages of the DBMS
- DBMS users
- Database administrator
- Role of DBA

Database Design and Architecture

- Essentials of Database Design
- Three level Architecture of Database - external, conceptual and internal
- Data Models concepts: Hierarchical, Network and Relational, Operators
- Relations, domains and attributes, keys
- Traditional set operations
- Special relational operations
- The E/R model Entity
- E-R Diagram, Attributes, Relationship & Types, Development stages of E-R diagram & Examples Normalization Normalization Process, 1st NF , 2nd NF, 3rd NF

SQL

Writing Basic SQL SELECT Statements

- Basic SELECT Statement
- Selecting All Columns
- Selecting Specific Columns
- 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 Multiple Columns
- Sorting by Column Alias

Single-Row Functions

- SQL Function
- Two Types of SQL Functions
- Character Functions
- Case Manipulation Functions
- Character-Manipulation Functions
- Number Functions
- Using the ROUND Function
- Using the TRUNC Function
- Using the MOD Function
- Working with Dates

- Arithmetic with Dates
- Conversion Functions
- Nesting Functions
- NVL Function
- Using the NVL2 Function
- Using the NULLIF Function
- Using the COALESCE Function
- Conditional Expressions
- The CASE Expression
- The DECODE Function

Displaying Data from Multiple Tables

- Obtaining Data from Multiple Tables
- Cartesian Products
- Types of Joins
- Equijoin
- Retrieving Records with Equijoins
- Search Conditions Using AND Operator
- Qualifying Ambiguous Column Names
- Using Table Aliases

- Joining More than Two Tables
- Non-Equijoins
- Retrieving Records with Non-Equijoins
- Outer Joins
- Self Joins
- LEFT OUTER JOIN
- RIGHT OUTER JOIN
- FULL OUTER JOIN

Aggregating Data Using Group Functions

- Group Functions
- Types of Group Functions
- 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 GROUP BY Clause
- Grouping by More Than One Column
- Excluding Group Results
- Using the HAVING Clause
- Nesting Group Functions

Subqueries

- Types of Subqueries
- Single-Row Subqueries

- Using Group Functions in a Subquery
- ANY and ALL Operator in Subquery

- Correlated Subqueries
- Correlated UPDATE and DELETE
- Using the EXISTS Operator
- Using the NOT EXISTS Operator

Creating and Managing Tables

- Database Objects
- Naming Rules
- The CREATE TABLE Statement
- Data Types
- Describing Table
- The ALTER TABLE Statement
- Adding a Column
- Modifying a Column
- Dropping a Column
- Dropping a Table
- Changing the Name of an Object
- Truncating a Table

Manipulating Data

- Adding a New Row to a Table
- Inserting Rows with Null Values
- Copying Rows from Another Table
- Changing Data in a Table
- Updating Rows in a Table
- Updating Rows Based on Another Table
- Removing a Row from a Table
- The DELETE Statement
- Deleting Rows from a Table
- Deleting Rows Based on Another Table
- Using the WITH CHECK OPTION Keyword on
- DML Statements
- Database Transactions
- Read Consistency
- Advantages of COMMIT and ROLLBACK Statement
- Locking
- Implicit Locking

Including Constraints

- Defining Constraints
- The NOT NULL Constraint
- The UNIQUE Constraint
- The PRIMARY KEY Constraint
- The FOREIGN KEY Constraint
- The CHECK Constraint
- Adding a Constraint
- Dropping a Constraint
- Disabling Constraints
- Enabling Constraints
- Cascading Constraints
- Viewing Constraints

Creating Views

- Database Objects
- Definition of View
- Uses of View
- Simple Views and Complex Views
- Creating a View
  Inline Views
- Retrieving Data from a View
- Querying a View
- Modifying a View
- Creating a Complex View
- Using the WITH CHECK OPTION Clause
- Removing a View

Other Database Objects

- Database Objects
- Definition of Sequence
- Creating and Modifying a Sequence
- NEXTVAL and CURRVAL Pseudo columns
- Removing a Sequence
- Definition of Index
- Creating and Removing an Index
- Creating and Removing Synonyms

Controlling User Access

- Creating Users
- Granting System Privileges
- 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
- Revoking Object Privileges

Using SET Operators

- The SET Operators
- The UNION Operator
- The UNION ALL Operator
- The INTERSECT Operator
- The MINUS Operator

PL/SQL

Programming in PL/SQL

- Introduction to PL/SQL
- The Origins of PL/SQL
- SQL*Plus
- Performing Essential PL/SQL Tasks
- Language Fundamentals
- PL/SQL Block Structure
- Identifiers, Literals
- Comments
- The PRAGMA Keyword
- Labels

PL/SQL Program Structure

- Conditional and Sequential Control
- CASE Statements and Expressions
- The GOTO Statement
- Iterative Processing with Loops
- The WHILE Loop
- The Numeric FOR Loop
- The Cursor FOR Loop
- Loop Labels

Exception Handlers

- Exception-Handling Concepts and Terminology
- Defining Exceptions
- Raising Exceptions
- Handling Exceptions
- Building an Effective Error Management Architecture

Data Retrieval

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

Procedures, Functions, and Parameters

- Procedures
- Functions
- Parameters
- Local Modules
- Forward Declarations

Triggers

- DML Triggers
- DDL Triggers
- Database Event Triggers
- INSTEAD OF Triggers
- Maintaining Triggers

Project

Packages

- Uses of Packages
- Rules for Building Packages
- Rules for Calling Packaged Elements
- Working with Package Data
- When to Use Packages