

## **RELATIONAL DATA BASE MANAGEMENT SYSTEM (RDBMS)**

**An Overview of DBMS and DB Systems Architecture:** Introduction to Database Management systems; Data Models; Database System Architecture; Relational Database Management systems; Candidate Key and Primary Key in a Relation; Foreign Keys; Relational Operators; Set Operations on Relations; Attribute domains and their Implementation.

**The Normalization Process:** Introduction; first Normal Form; data Anomalies in 1NF Relations; Partial Dependencies; Second Normal Form; data Anomalies in 2NF Relations; Transitive Dependencies; Third Normal Form; data Anomalies in 3NF Relations;

**The Entity Relation Ship Model:** The Entity Relationship Model; Entities and Attributes; Relationships; One-One Relationships; Many-to-one Relationships; Normalizing the Model; Table instance charts.

**Interactive SQL:** SQL commands ; Data Definition Language Commands; Data Manipulation Language Commands; The Data types a cell can hold; insertion of data into the tables; Viewing of data into the tables; Deletion operations; updating the contents of the table; modifying the structure of the table; renaming table; destroying tables; Data Constraints; Type of Data Constraint; Column Level Constraint; Table Level Constraint; Null value Concepts; The UNIQUE Constraint; The PRIMARY constraint; The FOREIGN key constraint; The CHECK Constraint; Viewing the User Constraints;

**Viewing The Data:** Computations on Table Data; Arithmetic Operators; Logical Operators; Comparison Operators; Range Searching; Pattern Searching; ORACLE FUNCTIONS; Number Functions; Group Functions; Scalar Functions; Data Conversion Functions; Manipulating Dates in SQL ; Character Functions;

**Sub queries and Joins:** Joins; Equi Joins; Non Equi Joins; Self Joins; Outer Joins; SubQueries; Correlated Queries; Using Set Operators:- Union , Intersect; Minus ;

**Views and Indexes:** Definition and Advantages Views; Creating and Altering Views; Using Views; Indexed Views; Partitioned views; Definition and Advantages of Indexes; Composite Index and Unique Indexes; Accessing Data With and without Indexes; Creating Indexes and Statistics.

**Introduction to PL/SQL:** Advantage of PL/SQL; The Generic PL/SQL Block; The Declaration Section; The Begin Section; The End Section; The Character set; Literals; PL/SQL Data types; Variables; Constants; Logical Comparison; Conditional Control in PL/SQL; Iterative Control;

**Advanced PL/SQL:** Types of Cursors; Implicit Cursor; Explicit Cursor; Explicit Cursor attributes; Cursor For Loop; Parameterized Cursor; Error Handling in PL/SQL; Internal Exceptions; User Defined Exceptions.

**Database Objects:** Sequences, Creating Sequences; Referencing Sequences; altering a Sequence; Dropping a Sequence, Stored Procedures and Functions:- Advantages of using a

Procedure or Function; Procedure Versus Functions; Creating stored Procedures and Functions; Parameters to Procedures and Functions; Deleting a Stored Procedure or a Functions; Packages:- Components of a Package; Package Objects; Private and Public ; Package state; Package Dependency; Triggers:- Use of Database Triggers; Database Triggers V/s Procedures; Database Triggers V/S Integrity constraints; RAISE\_APPLICATION\_ERROR PROCEDURE; Types of Triggers:- Row Triggers, statement Triggers; Before V/S After Triggers; Deleting a Trigger;

**Object Types and Varying Arrays:** User Defined Data Types, Creating a Type, Varying Array, Creating and Using a Varying array, Nested Tables.

**Objects/Basic Database Administration:** Basic Data Base Administration; Creating User; Using Tables in Another schema; Creating roles for Applications; Granting and Revoking previliges; System and Object Privileges;

## **ORACLE**

**Concept of RDBMS:** 12 Codd's rules for RDBMS. Characteristics of Relational DBMS, Introduction to ORACLE: Oracle tools: DATABASE DESIGN: Conceptual Design: DATA Modelling using E.R. Modelling, TABLES: Rows, Columns, Entity, Attributes, Relationship, Normalization.