

RDBMS

Oracle 10g

Certification Training

DBA
Developers
Track

LEARN THE FOLLOWINGS

RDBMS

Oracle Architecture

RDD

Relational Model

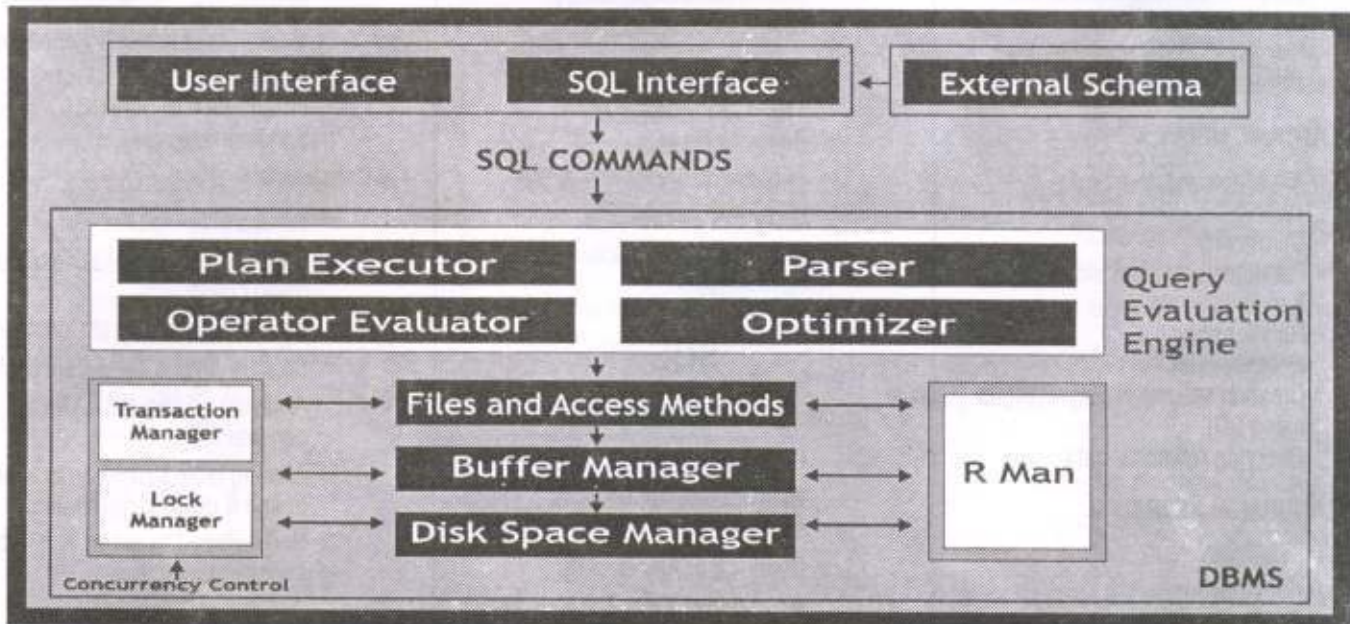
All 12 CODD's Rules.

E-R Modelling

Normalization

SQL / PLSQL

Relational Algebra



TEST YOURSELF

Why is normalization required ?

Which operator is basic operator ?

Which operators are derived ?

What are range variables in SQL ?



HO. : 4th Floor, IDCO Tower, 1 Janpath, Bhubaneswar - 751022, Orissa
Phone : 0674-2542520

BO. : 1st Floor, Manorama Complex, Main Road, Gandhi Nagar,
Berhampur - 760001, Orissa, Phone : 0680 -3290716

www.lakshyatraining.org / www.lakshyasolutions.com

RDBMS Training with Oracle - 10g (DBA / DEV Track)

Relational Database Designing using ER Modeling & Normalization

+ <RELATIONAL DATABASE DESIGNING >

- What is database
- An in-depth introduction to databases and database implementation
- Manual vs computerized database
- File system vs a DBMS
- Advantages of a DBMS
- Models of database designing
- Concepts of relational model
- Database System Architecture
- Keys & their characteristics.
- Levels of abstraction in a RDBMS
- Data independence
- Important of database designing.
- Different type of database and application
- How an RDBMS manages the storage hierarchy

+ <RELATIONAL MODEL >

- Attributes and domains
- Tuples
- Cardinality
- Relations and Their schema
- Key constraints
- Relationship
- Integrity rules
- Creating and modifying relations using SQL
- Querying relational data

+ <RELATIONAL ALGEBRA >

- Selection
- Projection
- Joins
- Set operators
- Renaming
- Division
- Examples of Relational algebra queries

+ <RELATIONAL CALCULUS >

- Tuple relational calculus
- Domain relational calculus

+ <E-R Modelling >

- What is ER ? Importance of ER.

- Application of ER to case-studies.
- Entities , Attributes and Entity sets
- Simple E- R Diagram based on queries.
- ER Diagramming Rules.
- Types of Relationships.
- Representation of Relationships
- Mapping ER Diagrams into Tables.
- Fine-tuning ER Diagrams (Specialization, Generalization & Normalization).

+ <Normalization >

- What is Normalization ?
- Objectives of Normalization.
- Data Redundancy.
- Functional Dependency.
- Dependencies
- Multi-valued Dependency.
- Levels of Normalization.
- Implementation of 1NF→2NF→3NF→ Boyce-Codd NF.
- Implementation of 4NF & 5NF.
- Denormalization.
- Mapping Table structures after Normalization.

SQL

+ <Introduction to Oracle 10g / SQL Server >

- RDBMS vs. DBMS
- Data storage - datafiles & segments
- Overview of Architecture.
 - Tablespaces.
 - Global Databases.
 - Schemas
 - Database Objects
- Introduction to Database objects.
- SQL and its components.
- Accessing Oracle 10g database from Windows or Linux or Unix workstations.

+ <isql*plus Environment >

- Overview of isql*plus

- Logging into isql*plus
- Sql statement versus isql*plus command
- Displaying table structure
- Interacting with script files
- Substitution variables

+ <Tables >

- What is a Table ?
- How does table store data ?
- Object naming conventions
- DDL for Table Creation.
- Datatypes
- Creation of Table structures from ER Diagrams.
- DDL for Alteration of Table Structures.
- DDL for Removing tables.
- DDL for removal of data segments of tables & Renaming of tables.
- Introduction to Data Dictionaries and their examples.

+ <Constraints >

- What are Constraints ?
- Implementation of Business Rules using constraints.
- Naming convention of Constraints.
- Column-level & Table Constraints.
- Applying off-line (table) level constraints.
- Altering table structures to apply in-line & off- line constraints.
- Removing, Disabling & Enabling constraints.

+ <DML - for data management. >

- What is DML ?
- SQL Statements listed under DML.
- Insert statement.
- Insertion of DEFAULT & NULL values, change column sequence & using substitution values.
- Update statement.
- Delete statement.
- Comparison of Drop, Delete &

Truncate statements.

+ <SELECT - for retrieval of information.>

- What is SELECT statement ?
- Execution sequence of SELECT.
- WHERE Conditions & operators.
- Wildcard pattern matching.
- Ordering Result Set - ORDER BY
- Single-value Functions (string, numeric, date & null values).
- GROUP BY clause.
- HAVING Conditions.
- Aggregate Functions.
- Decision Making - CASE & DECODE.

SQL Function

+ <Single row Function>

- Character Functions
- Numeric Functions
- Conversion Functions
- Date Function
- General Functions
- Using the Decode Functions
- Using the Case Expression

+ <Group Functions>

- What are Group Functions
- Type of Group Functions
- Group by Clause
- Having Clause
- Group Function with where Clause

+ <JOINS - Information from Multiple tables.>

- What is a JOIN ?
- Types of JOINS.
- Cartesian Product (Cross-join).
- Equi-join.
- Nonequi-join
- Natural Join.
- Outer Join - Left & Right.
- Self Join.

+ <SUBQUERIES - Embedded Queries.>

- What is a SUB-QUERY ?
- Types of SUB QUERIES.
- Single-value Comparison Operators.
- Multi-value Comparison Operators.
- EXISTS Operator.
- Pair-Wise & Non-Pair-Wise Comparison.
- Co-Related Subquery & their

execution.

- DML using Sub-query.

+ <VIEWS - for Information Presentation.>

- What are VIEWS ?
- Objectives of creating Views.
- Strategies for implementing Views.
- DDL for creation of View
- Displaying data using Views.
- DMLs using Views.
- Validating DMLs using Views WITH CHECK OPTION clause.
- Read-only Views WITH READ ONLY clause.
- Removing Views.
- Dynamic or In-line Views.
- Top-N Analysis using Dynamic Views.

+ <Locks>

- Introduction to lock management
- Lock conversions
- Concept of locking
- Types of locks
- Row level locks
- Share lock
- Share update lock
- Exclusive lock
- Dead lock
- Deadlock prevention
- Nowait

+ <Table partitions>

- Partitioning methods
- Advantages of table partitions
- Data type restrictions
- Type of partitions
- Maintaining partitions
- Inserting records into a partitioned table

+ <INDEX - faster retrieval of Information.>

- What is an INDEX ?
- Types of Index - Explicit & Automatic.
- DDL for Creating Index.
- Where to create Index ?
- DDL for Removing Index.
- Introduction to ORACLE OPTIMIZER.
- How an Index works ?
- Types of Table Access by Index - TABLE ACCESS FULL & TABLE ACCESS BY ROWID.

- Implementation of Index by Optimizer in WHERE statements.

+ <SYNONYMS - alias for database objects.>

- What is a SYNONYM ?
- DDL for Creating Synonyms.
- Synonyms for objects of other Schemas.
- DDL for Removing Synonyms.

PL/SQL

+ <TRANSACTION PROCESSING>

- What is a Transaction ?
- How Oracle implements Transaction Processing ?
- Objectives of Transaction Processing.
- What is UNDO of ROLLBACK SEGMENT ?
- Starting & Terminating Transactions.
- Transaction Orientation of DB users.
- Explicit Control of Transactions.
- COMMIT, SAVEPOINT & ROLLBACK Statements.
- Read Consistency & its implementation.
- Concurrent Access of Data.
- Locking - Explicit & Implicit.
- SHARED & EXCLUSIVE Locks.
- Statements for Explicit Locking.

+ <PL/SQL - RDBMS Programming>

- What is a PL ?
- Advantage of PL with SQL.
- Structure of a PL Block.
- Variables & their advantages ?
- Categories of DATATYPES.
- Environment & PL Variables.
- Dynamic variables - %TYPE & %ROWTYPE.
- Bind & Substitution Variables.
- Programming Constructs.
- Decision Making - IF & CASE.
- Iteration - WHILE, FOR & LOOP
- Writing PL Programs, compiling & executing the Plan.

+ <CURSORS - Accessing the Result Set.>

- What is a CURSOR ?
- Objectives of using Cursors.

- Declaration of Cursors.
- Opening, Fetching, Processing & Closing a Cursor ?
- Cursor Attributes.
- Data Updating using Cursors.

+ <PROCEDURES - RDBMS Programs.>

- What is a Named Procedure ?
- DDL for Creating Procedure.
- Parametres - Datatypes, IN/OUT Modes, Default Vlues.
- Calling a Procedure.
- Procedure Calls f om within another Procedure.
- Real life implementations of Procedures for automation of data updation tasks.
- DDL for Removing Procedures.

+ <TRIGGERS - Automating tasks in RDBMS.>

- What is a Trigger ?
- Comparison of Trigger & Procedure.
- How does a Trigger work ?
- DDL For Creating Triggers.
- Implementation of BEFORE & AFTER Triggers.
- Difference between TABLE-Level & ROW-Level Triggers.
- Implementation of Table-level triggers.
- Acessing OLD & NEW Variables.
- Conditional Execution of Triggers using WHEN Clause.
- Implementation of INSTEAD OF Triggers on Views.
- Automation of Data updation tasks.
 - Auto primary key generation.
 - Auto INSERT / UPDATE / DELETE
 - Implement Referential Integrity.
- PROJECT development using Procedures & Triggers (NO Front End).

INTERNAL ARCHITECTURE

+ <Oracle Architecture>

- Objectives
- Oracle Server
- Creating a session
- Oracle Database
- Physical Structure
- Memory Structure

- System Global Area (SGA)
- Program Global Area (PGA)
- Background Processes
- Logical Structure
- Processing SQL statements

+ <Getting Started With The Oracle Sever>

- Database Administration Tools
- Oracle Universal Installer
- Oracle Database Configuration Assistant
- Database Administrator Users
- Oracle Enterprise Manager
- Oracle Enterprise Manager - Architecture
- Console

+ <Managing an Oracle Instance>

- Initialization Parameter Files
- Starting up a Database
- Shutting Down the Database
- MOUNT / NOMOUNT / OPEN
- ALTER Database Command
- Opening a Database in Restricted Mode
- Alert log file

+ <Creating a Database>

- Managing and Organizing a Database
- Operating System Environment
- Database Configuration Assistant
- Creating a Database Manually
- Creating the Database
- After Database Creation

+<Data Dictionary Contents and Usage>

- Data Dictionary
- Base Tables and Data Dictionary Views
- Dynamic Performance Tables

+<Control File>

- Control File Contents
- Multiplexing the Control File
- Managing Control Files with OMF
- Obtaining Control File Information

+<Maintaining Redo Log Files>

- Using Redo Log Files
- Structure of Redo Log Files
- Online Redo Log File Configuration
- Archived Redo Log Files

8. Managing Tablespaces and Datafiles

- Using Redo Log Files
- Structure of Redo Log Files

- Online Redo Log File Configuration
- Archived Redo Log Files

+<Storage Structures and Relationships>

- Storage and Relationship Structure
- Types of Segments
- Extent Allocation and Deallocation
- Database Block
- Data Block Management

+<Managing Undo Data>

- Managing undo data overview
- Undo segment
- Read consistency
- Type of undo segments
- Obtaining undo segment information

+<Managing Tables>

- Regular table
- Partitioned table
- Index-organized table
- Cluster
- Data types

+<Managing Users>

- Database schema
- Creating a new user-Database Authentication
- Creating a new user-Operating System Authentication
- Changing user Quota on Tablespaces
- Dropping a user
- User information

+<Privileges>

- System Privileges
- Granting System Privileges
- SYSDBA and SYSOPER Privileges
- Revoking System Privileges
- Object Privileges
- Granting Object Privileges
- Revoking Object Privileges
- Confirming privileges granted With Grant Option

+<Roles>

- Roles
- Benefits of Roles
- Creating Roles
- Predefined Roles
- Granting Privileges to a Role
- Enabling and Disabling Roles
- Granting Role to Users
- Roles to User Revoking Roles from User