

# Database Management System

## **1) Introductory concepts of DBMS**

- Database
- Database concept
- Purpose of DBMS
- Database components and Layer
- Database Architecture
- Database Model
- E-R codd's Rule
- Database users and DBA

## **2) RDBMS concept**

- Relation
- Keys
- Relational Model
- Structure of Relational Database
- Relation Algebra syntax
- Relational Algebra Queries

## **3) Entity-Relationship Model**

- Basic concept
- Design process
- E-R diagram
- different types of entities & relationships
- weak entity set
- Extended E-R features :

## **4) Generalization**

## **5) Specialization**

## **6) Aggregation**

- Constraints of IS-A relationship
- Reduction of E-R database schema

## 7) Relational Database Design

- Function dependency
- Dependency preservation
- Lossless and lossy decomposition
- Multivalued dependency
- Normalization - 1NF, 2NF, 3NF, BCNF, 4NF, 5NF

## 8) SQL

- datatype
- SQL Languages : DDL, DML, DCL, TCL, DQL
- www.gisurat.com 7777 95 68 77
- Create, Alter, Drop, Rename , Add column
- Insert, Update, Delete Queries
- distinct
- order by
- truncate and delete command difference
- NULL value – IS NULL / IS NOT NULL
- LIKE - LIKE with escape – NOT LIKE escape '''
- alias name
- and / or / not
- not in / in operator
- Arithmetic operator (+,-,\*,/,=,!=)
- between operator
- dual table
- in-built function :-

- 1) String/Char Functions
- 2) Numeric/Math Functions
- 3) Date/Time Functions
- 4) Conversion Function
- 5) Analytic Function

## 6) Advanced Function

## 7) Grouping Function

- Constraints with system table entry
- group by
- having by
- Joins ( inner , left , right , full)
- set operators (Union / union all / intersect / minus)
- Any / all
- case when
- with clause
- sub query / nested query and co-related sub-query
- EXISTS / NOT EXISTS
- View
- Index
- sequence
- materialized view

## 9) Security

- DCL concept
- Discretionary access control
- Mandatory access control
- Role-based access control
- Grant / Revoke command
- set role
- create user

[www.gisurat.com](http://www.gisurat.com) 7777 95 68 77

## 10) PL/SQL block

- PL/SQL block concept
- PL/SQL conditional statements

1) Simple Loop with exit and continue

- 2) For loop
- 3) While loop
- 4) IF-ELSE condition
- 5) case-end case
- 6) Goto statement
- Cursors
- Procedure
- Function
- Package
- Trigger
- Exception handling
- Array Type

## **11) Transaction Management**

- TCL command
- 1) commit
- 2) savepoint
- 3) rollback
- Transaction management
- ACID property
- Schedule
- Serializability and testing of serializability
- state of transactions
- concurrent executions of transactions and related problems
- solution to concurrency related problems and concurrency control techniques
- Deadlock
- Deadlock detection
- Techniques to control deadlock
- Starvation

- Deadlock Recovery
- Database Recovery - Log based Recovery

## **12) Window Function**

- Aggregate Window Function
- Ranking Window Functions

## We are providing Training in Below Courses

**Project Training**

-:-

**Internship**

|               |                        |               |
|---------------|------------------------|---------------|
| C/C++         | Python / Django        | Data Analysis |
| DSA           | React Js / Angular Js  | Power BI      |
| DBMS          | MERN / MEAN            | AI / ML       |
| Mongo DB      | Full Stack Development | Data Science  |
| Java/Ad. Java |                        | Generative AI |

- ***Certified Courses.***
- ***100% job assistance\*.***
- ***Courses with Hands-On Projects.***