Module – 5

DATABASE

1. What do you understand By Database?

=> Database is collection of structured information and records.

=> Usually database contains many type of information and files.

=> Database stores data in structured and organized form.

2. What is Normalization?

=> Normalization is used to reduce redundancy from database.

=> Normalization rules divides larger tables into smaller tables and link together using relationships.

=> A purpose of Normalization in database is to elimate of data and store data into proper form.

=> There is three type of Normalization :

i) First Normalization Form (1NF)

ii) Second Normalization Form (2NF)

iii) Third Normalization Form (3NF)

iv) BCNF (Boyce-Codd Normal Form)

i) First Normalization Form (1NF) :

- This is basic level of normalization.
- In 1NF, each table cell contains only a single values and each column should have unique name.
- The 1NF form helps to eliminate duplicate data.

ii) Second Normalization Form (2NF) :

- It builds upon 1NF and addresses partial dependencies.

- It requires that each non-key column is fully functionally dependent on the entire primary key.

iii) Third Normalization Form (3NF) :

- It expands the concept of 2NF and deals with transitive dependencies.

- IT requires that each non-key column is dependent on the primary key and not on any other non-key column.

iv) BCNF :

- BCNF stands for Boyce-Codd Normalization Form.

- It is advance version of 3NF.

- It is based on functional dependencies that take into account all candidate keys in a relations.

3. What is Difference between DBMS and RDBMS?

DBMS	RDBMS
Stands for Database Management System.	Stands for Relational Database Management System.
It stores data as files.	It stores data in tabular form.
No relation between data.	Data stores in tabular form which are related to each other.
It deals with small amount of data.	It deals with large amount of data.
Data redundancy is common in this model.	Data redundancy not allowed due to Keys and Indexes.
Less secure.	It is secure than DBMS.
Data fetching is slower.	Data fetching is faster.
Ex. XML, Window Registry, Forxpro	Ex. MySQL, SQL server , Oracle, Microsoft Access.

4. What is MF Cod Rule of RDBMS Systems?

=> Rules :

- Rule 0 : The Foundation Rule
  - The database must be in relational form. So that the system can handle the database through its relational capabilities.

- Rule 1 : Information Rule
  - A database contains various information, and this information must be stored in each cell of a table in the form of rows and columns.

- Rule 2 : Guaranteed Access Rule
  - This rule ensures that each data value in a relational database can be uniquely identified using a combination of table name, primary key, and column name.

- Rule 3 : Systematic Treatment of Null Values
  - This requires that a relational database must handle missing or unknown data using a systematic approach, typically through the use of NULL values.

- Rule 4 : Active/Dynamic Online Catalog based on the relational model
  - The catalog, which contains metadata about the database, must be accessible through the same query language used to manipulate data.

- Rule 5 : Comprehensive Data SubLanguage Rule
  - The relational database supports various languages, and if we want to access the database, the language must be the explicit, linear or well-defined syntax, character strings and supports the comprehensive

- Rule 6 : View Updating Rule
  - All views table can be theoretically updated and must be practically updated by the database systems.

- Rule 7 : Relational Level Operation (High-Level Insert, Update and delete) Rule
  - The system should support set-based operations that can add, modify, or delete multiple records at once, rather than just individual records.

- Rule 8 : Physical Data Independence Rule
  - This rule ensures that changes in the physical storage or structure of the database do not affect the logical access to the data.

- Rule 9 : Logical Data Independence Rule
  - Rule 9 states that changes to the logical structure of the database (like adding or modifying tables and columns) should not impact the existing applications.

- Rule 10 : Integrity Independence Rule
  - The database management system must guarantee the validity and integrity of the data, independent of the applications using the data.

- Rule 11 : Distribution Independence Rule
  - In a distributed database environment, this rule requires that the distribution of data should be transparent to the users.

- Rule 12 : Non-Subversion Rule
  - The database system must not allow users to bypass or subvert the integrity rules and constraints defined by the database administrator.

5. What do you understand By Data Redundancy?

=> In DBMS, when the same data is stored in different tables, it causes data redundancy.

=> Sometimes, it is done on purpose for recovery or backup of data, faster access of data, or updating data easily.

=> Sometimes, unintentional duplicity of data causes a problem for the database to work properly, or it may become harder for the end user to access data.

6. What is DDL Interpreter?

=> DDL stands for Data Definition Language.

=> A set of SQL commands to change the structure of the table.

=> It's deal with the description of the database schema.

=> It's contains queries of create, alter, truncate, drop.

- CREATE : It's used to create database or table.
- ALTER : To alter logical structure of the table.
- TRUNCATE : To remove all the records from the table.
- DROP : To Delete the table from the database.

7. What is DML Compiler in SQL?

=> DML stands for Data Manipulation Language.

=> It's a set of SQL commands to change the data of the table.

=> It's allows user to insert, update, delete data from the table of database.

- INSERT : To insert data into a table.
- UPDATE : To modify existing data in the table.
- DELETE : To delete records from the table.

8. What is SQL Key Constraints writing an Example of SQL Key Constraints.

=> There is Three Key Constraint is SQL :

i) Primary Key

ii) Foreign Key

iii) Unique Key

i) Primary Key :

- A Primary Key constraint is an individual identifier for each record in database.
- It guarantees that each database entry contains a single, distinct value and that can not be null.

ii) Foreign Key :

- Reference to the Primary Key in another table is Foreign Key constraint.
- It ensures that the values of a column in one table correspond to the primary key column in another table.

iii) Unique Key :

- Unique Key is a column or set of column that uniquely identify each record in a table.
- All values will have to be unique in this key.
- Unique Key differs from the Primary Key because its allow null value to the column.

9. What is save Point? How to create a save Point write a Query?

=> SAVEPOINT command is used to temporarily save a transaction so that you can rollback to that point whenever required.

=> It marks and save the current point in the processing of a transaction.

=> Syntax of savepoint :

- SAVEPOINT savepoint_name;