**DATABASE**

1). What do you understand by database?

A database is an organized collection of structured information, or data, typically stored electronically in a computer system. A database is usually controlled by a database management system (DBMS).

2). What is Normalization?

Normalization is a database design technique that reduces data redundancy and eliminates undesirable characteristics like Insertion, Update and Deletion Anomalies. Normalization rules divides larger tables into smaller tables and links them using relationships. The purpose of Normalization in SQL is to eliminate redundant(repetitive) data and ensure data is stored logically.

Database Normal Forms in SQL: -

1NF (First Normal Form)

A relation is in 1NF if it contains an atomic value.

2NF (Second Normal Form)

A relation will be in 2NF if it is in 1NF and all non-key attributes are fully functional dependent on the primary key.

3NF (Third Normal Form)

A relation will be in 3NF if it is in 2NF and no transition dependency exists.

BCNF (Boyce-Codd Normal Form)

A stronger definition of 3NF is known as Boyce Codd's normal form.

4NF (Fourth Normal Form)

A relation will be in 4NF if it is in Boyce Codd's normal form and has no multi-valued dependency.

5NF (Fifth Normal Form)

A relation is in 5NF. If it is in 4NF and does not contain any join dependency, joining should be lossless.

3). What is Difference between DBMS and RDBMS?

|  |  |
| --- | --- |
| DBMS (Database management system) | RDBMS (Relational database management system) |
| * Data stored is in the file format. | * Data stored is in table format. |
| * There is normalization. | * Normalization is not achievable. |
| * DBMS supports a single user. | * RDBMS supports multiple users. |
| * There is only low security while handling data. | * It features multiple layers of security while handling data. |
| * The software and hardware requirements are low. | * The software and hardware requirements are higher. |
| * Example:- XML, Microsoft Access. | * Example:- Oracle, SQL Server. |

4). What is MF Cod Rule of RDBMS Systems?

Relational database theory was first introduced by Edgar Frank Codd in 1970. Edgar Frank Codd was a British computer scientist who, while working for IBM, invented the relational model for database management the theoretical basis for relational databases. Codd defined 13 rules, often termed “Cod’s 12 rules” because he numbered them from zero through 12, on satisfying a relational model, these rules serve as the framework for what a truly relational database should be.

5). What do you understand By Data Redundancy?

Data redundancy refers to the practice of keeping data in two or more places within a database or data storage system. Data redundancy ensures an organization can provide continued operations or services in the event something happens to its data --for example, in the case of data corruption or data loss. The concept applies to areas such as databases, computer memory and file storage systems.

6). What is DDL Interpreter?

DDL (Data Definition Language) Interpreter interprets the DDL statements and records the generated statements in the table containing metadata.

7). What is DML Compiler in SQL?

DML (Data Manipulation Language) the DML commands in Structured Query Language change the data present in the SQL database. We can easily access, store, modify, update and delete the existing records from the database using DML commands.

There are four main DML commands in SQL: -

1). SELECT Command:-

Syntax: - SELECT column\_Name\_1, column\_Name\_2, ….., column\_Name\_abc FROM Name\_of\_table;

2). INSERT Command:-

Syntax: - INSERT column\_Name\_1, column\_Name\_2, ….., column\_Name\_abc FROM Name\_of\_table;

3). UPDATE Command:-

Syntax: - Update Table Name SET [column\_Name1=value\_1 ….., column\_name\_abc] where conditions;

4). DELETE Command:-

Syntax:- DELETE FROM Table\_Name WHERE condition.

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

In a database table, we can add rules to a column known as constraints. These rules control the data that can be stored in a column.

1). NOT NULL Constraint: -

A values cannot be null.

Example: - CREATE TABLE Colleges (

college\_id INT NOT NULL,

college\_code INT NOT NULL,

college\_name VARCHAR (50)

);

2). UNIQUE Constraint: -

Unique values cannot match any older value.

Example: - CREATE TABLE Colleges (

college\_id INT UNIQUE,

college\_code INT, UNIQUE,

college\_name VARCHAR (50)

);

3). PRIMARY KEY: -

Primary key used to uniquely identify a row.

Example: - CREATE TABLE Colleges (

college\_id INT PRIMARY KEY,

college\_code INT NOT NULL,

college\_name VARCHAR (50)

);

4). FOREIGN KEY:-

Foreign key is references a row in another table.

Example:- CREATE TABLE Orders (

order\_id INT PRIMARY KEY,

customer\_id int REFERENCES Customers(id)

);

5). CHECK: -

Check is validates condition for new value.

Example: - CREATE TABLE Orders (

order\_id INT PRIMARY KEY,

amount int CHECK (amount >= 100)

);

6). DEFAULT: -

A set default value if not passed.

Example: - CREATE TABLE College (

college\_id INT PRIMARY KEY,

college\_code INT,

college\_country VARCHAR (50) DEFAULT 'INDIA'

);

7). CREATE INDEX: -

Create index used to speed up the read process.

Example: - create table

CREATE TABLE Colleges (

college\_id INT PRIMARY KEY,

college\_code INT NOT NULL,

college\_name VARCHAR (50)

);

create index

CREATE INDEX college\_index

ON Colleges(college\_code);

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

The save point is used for dividing (or) breaking a transaction into multiple units so that the user has a chance of roll backing the transaction up to a specified point. That means using Save Point we can roll back a part of a transaction instead of the entire transaction.

The save point statement in MySQL is used to save a transaction temporarily. We can save multiple SAVEPOINT in a single transaction. We can ROLLBACK the transaction to a given save point and the transaction after that save point are revert back to its previous state. We cannot ROLLBACK to a save point after the commit statement.

Example:- Create table product (product\_id int auto increment,

Product\_name varchar (30),

Price int,

Quantity int,

Primary key (Product\_id)

);

10). What is trigger and how to create a Trigger in SQL?

A trigger is a stored procedure in database which automatically invokes whenever a special event in the database occurs. For example, a trigger can be invoked when a row is inserted into a specified table or when certain table columns are being updated.

Syntax: - create trigger [trigger\_name]

[before | after]

{insert | update | delete}

on [table\_name]

[for each row]

[trigger\_body]