1. **What is a relational database management system (RDBMS)? What are the advantages of a database management system over a file system?**

A relational database management system is a program that allows us to create, alter delete and do many other processes in a relational database.

The advantages of RDBMS Over a file system are:

* Data Redundancy: Each data has more than one copy. i.e.; if a data is lost from RDBMS, it can be easily recovered from the remaining copy where as it is not possible in a file system.
* Data Sharing: Data can be easily shared.
* Data concurrency: There is a chance that a file can be used by multiple users at the same time. This could cause some anomalies while saving the process done by both of the users. In RDBMS, this is tackled by using a locking system.
* Data Security: In a filesystem, the files can be locked and protected using a password which is no safer. But, in a RDBMS, have specialized mechanisms to protect the data.

1. **In a database management system, explain the ACID properties.**

In Database management system, a transaction is said to be a single logical unit of work. In-order to maintain the consistency of a database, before and after a transaction takes place, certain properties are followed and these are called as ACID properties.

In ACID,

* A = Atomicity
* C = Consistency
* I = Isolation
* D = Durability

1. **Atomicity**

Atomicity is called as the “all or nothing” rule in ACID. It simply means that, a transaction cannot take place partially and can only take place as a whole. i.e.;

either the transaction takes place at once or doesn’t happen at all. It involves two following operations i.e.;

* Abort: If a transaction aborts, changes made to the database are not visible.
* Commit: If a transaction commits, the changes made to a database are visible.

1. **Consistency**:

It refers to the correctness of the database. It simply says that, the database should be consistent before and after the transaction takes place.

1. **Isolation:**

Isolation is the property which make sure that multiple transactions can occur concurrently in the database without causing any inconsistency to the database.

1. **Durability:**

This property makes sure that, after a transaction completes, the changes and modifications made to a particular database is stored in a written to the disk so that it exists even if a system failure occurs.

1. **Explain the concept of normalization?**

Normalization is the process of organizing data in a database to minimize

Redundancy, duplication, repetition or insertion deletion or updating anomalies.

There are basically 6 normal forms they are:

* First Normal Form – 1NF
* Second Normal Form – 2NF
* Third Normal Form – 3NF
* Boyce-Codd Normal Form – BGNF
* Fifth Normal Form – 5NF
* Sixth Normal Form – 6NF.

1. **Explain the many types of query languages used in relational databases. DQL, DML, DCL, and DDL are some examples.**

Query languages are basically used to perform certain functions in an RDBMS. The different types of query languages are:

* DDL or Data Definition Language: Is used to create alter and drop a database.
* DQL or Data Query Language: Is used to retrieve data from a database using SELECT statement
* DML or Data Manipulation Language: Is used to manipulate the data present in the database.
* DCL or Data Control Language: Is basically used to control the database.

1. **What is the difference between the main key and a composite key? Give instances of how primary key and composite are used.**

A primary key is basically a unique identifier in a table inside a particular database where as a composite key is made by making tow or more columns as primary key at the same time.

Eg : Primary Key

CREATE TABLE TBLNAME(

ID INT,

NAME VARCHAR(225),

CODE INT,

PRIMARY KEY(ID));

Eg: Composite Key

CREATE TABLE TBLNAME(

ID INT,

NAME VARCHAR(225),

CODE INT,

PRIMARY KEY(ID,CODE));

1. **Create a table with a primary key, a column default value, and a column unique constraint in SQL.**

CREATE TABLE Employee(

ID INT NOT NULL UNIQUE,

First\_Name VARCHAR(225),

Last\_Name VARCHAR(225),

Entry\_Day DATE DEFAULT(CURRENT\_DATE),

PRIMARY KEY(ID)

);