SQL Interview Questions

1. What is DBMS?

**DBMS(Database Management System)** is software that helps in creating, managing, and organizing data in a structured way. It makes storing, retrieving, and updating data efficient and user-friendly. It also ensures **security**, **consistency**, and **accessibility of data**.

Thinks of DBMS as a Library Catalog System. It helps librarian organize and find books efficiently, just like DBMS helps users store and retrieve data quickly.

1. What is Data, Datum and Information?

**Datum** is a single raw fact, **Data** is a collection of raw facts, and **Information** is when we process this data to give it meaning.

For example, if we collect students marks as data, calculating their average score gives us information about their performance.

1. What are the properties of database?

A database has several important properties that ensure it works efficiently.

1. **Integrity** which ensures that data remains accurate and consistent.
2. **Security** ensures that data is protected from unauthorized access.
3. **Isolation** ensures that each database transaction is executed independently and does not affect others.
4. **Consistency** ensures all users see the same updated data.
5. What are the types of database?

The main types of database are **relational(RDBMS),** which use tables to store data, No-SQLfor unstructured data, **Object-oriented** for object representation, **hierarchical** for tree-based relationships, **Distributed Database** where data is distributed across multiple locations.

1. What is Table, Attributes and Records?

A **table** is a collection of data organized into rows and columns in a database. Example., A ‘Student’ table contains all student-related data like name, age and grades.

**Attributes** are the columns in a table that define the properties of the data. Example.. In the “Student” table, attributes can be Name, age, and grade.

**Records** are the rows in a table that represents individual entries or data points.

1. What is SQL and Why SQL?

SQL, or **Structured Query Language** , is used to manage and manipulate data in relational database. It is popular because it is easy to use, efficient for handling large datasets, and standardized across most database systems. So with SQL, we can quickly query data, perform complex operations, and maintain databases effectively.

1. Why not No-SQL?

**No-SQL** databases are great for handling unstructured or semi-structured data, but they may not be the best choice in some scenarios where data is highly structured and requires complex relationship. Also No-SQL lacks a universal query language like SQL, making it less standardized.

So depending use cases, each database has its own benefits.

SQL is best for banking and financial systems, e commerce platforms and healthcare systems. On the other hand No-SQL is best for Social Media Platform, IoT applications content management systems.

1. What are the types of SQL commands?

SQL commands are categorized into five types.

1. **DDL(Data Definition Language)** : It is used to define or modify the structure of a database. Examples are **CREATE, ALTER, DROP** and **TRUNCATE**
2. **DML(Data Manipulation Language)** : It is used to manipulate data in tables. Examples are **INSERT, UPDATE,** and **DELETE.**
3. **DQL(Data Query Language)** : It is used to retrieve data from the database. Example is **SELECT.**
4. **DCL(Data Control Language)** : It is used to control the access to the database. Examples are **GRANT**, and **REVOKE**.
5. **TCL(Transaction Control Language)** : It is used to manage database transactions. Examples are **COMMIT, ROLLBACK**, and **SAVEPOINT**.
6. What are the data types in SQL?

Data types in SQL define the type of data a column can hold. There various data types like numeric data type used for numbers which contains **INT, FLOAT, DECIMAL**, String data types that is used for text data which contains **CHAR, VARCHAR, TEXT**, Date and Time types used for storing date and time values which has **DATE, TIME, DATETIME, TIMESTAMP**, Binary data type that is used for binary data like images or files which contains **BLOB,** Boolean data type used for true/false values which contains **BOOLEAN.**

1. What are CONSTRAINTS?

Constraints in SQL are rules applied to table columns to maintain data integrity. Examples include **NOT NULL** to prevent null values, **PRIMARY KEY** to uniquely identify rows, **UNIQUE** to ensure all values in a column are unique and **FOREIGN KEY** to enforce relationship between tables.