



Python

Interview Questions

1. What is a SCHEMA?

A schema in SQL is a collection of database objects, including tables, indexes, sequences, and other schema objects. It defines how data is organized in a relational database system. It is used to manage database objects and control access to them by different users.

2. Differentiate between HAVING and WHERE clauses.

These conditions are used for searching values except that the HAVING clause is used with the SELECT statement accompanied by the GROUP BY clause. The HAVING clause is used in combination with the GROUP BY clause to filter the data based on aggregate values, while the WHERE clause is used to filter the data based on individual values.

3. Define what is meant by CTE.

In SQL, a CTE (Common Table Expression) is a temporary result set, often used to simplify complex queries by breaking them into smaller, more manageable pieces. A CTE is created using the WITH clause and is available only within the context of the query that follows it.

4. What are SQL operators?

Operators are special characters or words that perform specific operations. They are used with the WHERE clause to filter data in most cases.

5. What is CDC?

CDC means change data capture. It records the recent activities made by the INSERT, DELETE, and UPDATE statements made to the tables. It is basically a process of identifying and capturing changes made to data in the database and returning those changes in real time. This capture of changes from transactions in a source database and transferring them to the target, all in real-time, keeps the system in sync. This allows for reliable data copying and zero-downtime cloud migrations.

6. Define Auto Increment.

“AUTO INCREMENT” is a clause used to generate unique values whenever a new record is created and inserted into a table. It means that every time a new row is inserted into the table, the database system automatically generates a new value for that column.

7. What is a COALESCE?

COALESCE is a function that takes a set of inputs and returns the first non-null values. It is used to handle null values in a query's result set.

8. What is Data Integrity?

Data integrity maintains security measures to the database by implementing rules and processes during the design phase. It helps with consistency and accuracy in the database.

9. Classify views.

Views can be classified into four categories:

Simple View - This is based on a single table and does not have a GROUP BY clause or other features.

Complex View - This is built from several tables and includes a GROUP BY clause and functions.

Inline View - This is constructed using a subquery in the FROM clause, creating a temporary table that streamlines complex queries.

Materialized View- This saves both the definition and the details. It builds data replicas by physically preserving them.

10. What is a SQL Injection?

SQL injection is a flaw in a code that allows attackers to take control of back-end processes and access, retrieve, and delete sensitive data stored in databases. This strategy is widely utilized using data-driven apps to get access to sensitive data and execute administrative tasks on databases.

11. Explain UNION operator.

In SQL, the UNION operator is used to combine the result sets of two or more SELECT statements into a single result set. The resulting set consists of unified records from both queries, and any duplicate rows are eliminated. The UNION operator requires that the SELECT statements being combined have the same number of columns and that the data types of the corresponding columns are compatible.

12. What is the purpose of INTERSECT operator?

An INTERSECT operator combines two or more SELECT statements and returns only the values common from the SELECT statements. For example, we have table1 and table2; when we apply INTERSECT to the query statement, only the common values are returned from the SELECT statements.

13. Differentiate the operators BETWEEN and IN.

BETWEEN operator is used for representing rows based on specific values. It then returns the total number of values found between two specified values. While IN operator is used to search for values within a given range of values. We apply the In operator if there is more than one value to define the range.

14. What is white box testing?

White box testing is a method for dealing with internal database structures where users can hide specification details. The methods involve the following:

- Eliminating internal errors

- Checks the consistency of the database

- Performs testing for functions such as triggers, views, and basic queries.

15. Explain black box testing.

Black box testing is a method that tests the interface of the database. It verifies incoming data, mapping details, and data used for query functions. Here the tester provides the input and watches the output generated by the system.

The black box testing involves testing the database by treating it as a "black box," focusing on its external behavior and functionality, without any knowledge of its internal structure, design, or code. The tester provides input to the database through its interfaces (such as SQL queries, stored procedures, or API calls), and observes the output generated by the database in response to that input.

It enables us to find how the system behaves to expected and unexpected user actions, response time, reliability issues, etc. Learn more about Black Box Testing and White Box Testing.

16. Define a TABLESAMPLE.

A TABLESAMPLE is a SQL statement that extracts random data using the FROM condition from a TABLE. It is done when the user doesn't need the entire dataset but only a specific table portion.

17. Explain Database mirroring.

Database mirroring is a disaster recovery technique used in SQL Server to provide redundancy and failover capabilities for critical databases. It involves maintaining two copies of a database, known as the principal database and the mirror database, on two separate servers. Database mirroring provides a highly reliable and robust solution for critical databases, with the ability to maintain high availability, reduce downtime, and provide a quick recovery in case of a failure.

18. What is the database engine used for?

The database engine is the underlying software mechanism used for storing, processing, and securing data. It processes queries, grants access, and optimizes transactions in the database engine.

19. Define PL/SQL.

Procedural Language for SQL is an extension that allows users to write code in a procedural language. The code can be run in the same SQL server and has features such as high security, scalability, and flexibility.

20. What does the WITH TIES statement do?

The WITH TIES statement is used in SQL queries to include additional rows that have the same values as the last row in the result set. It is typically used in conjunction with the TOP or LIMIT statement and the ORDER BY clause to return additional rows beyond the specified limit.