

1. **What is SQL?**

SQL (Structured Query Language) is a standard language for managing and manipulating databases.

2. **What is a database?**

A database is an organized collection of data that can be easily accessed, managed, and updated.

3. **What is the difference between SQL and NoSQL?**

SQL databases are relational and use structured data, while NoSQL databases are non-relational and handle unstructured data.

4. **What is a primary key?**

A primary key is a unique identifier for a record in a table that ensures entity integrity.

5. **What is a foreign key?**

A foreign key is a field in one table that uniquely identifies a row in another table, establishing a relationship between them.

6. **What is normalization?**

Normalization is the process of organizing data in a database to reduce redundancy and improve data integrity.

7. **What are the different types of SQL commands?**

SQL commands can be categorized into DDL (Data Definition Language), DML (Data Manipulation Language), DCL (Data Control Language), and TCL (Transaction Control Language).

8. **What is the purpose of the SELECT statement?**

The SELECT statement is used to query and retrieve data from one or more tables.

9. **What is the difference between WHERE and HAVING clauses?**

WHERE filters records before grouping, while HAVING filters records after aggregation.

10. **What is a JOIN?**

A JOIN is used to combine rows from two or more tables based on a related column.

**11. What are the types of JOINS?**

The types of JOINS include INNER JOIN, LEFT JOIN, RIGHT JOIN, and FULL JOIN.

**12. What is an index?**

An index is a database object that improves the speed of data retrieval operations on a table.

**13. What is a view?**

A view is a virtual table based on the result set of a SQL query, providing a way to simplify complex queries.

**14. What is a subquery?**

A subquery is a query nested inside another SQL query, used to return data that will be used in the outer query.

**15. What are aggregate functions?**

Aggregate functions perform calculations on a set of values and return a single value, like COUNT, SUM, AVG, MAX, and MIN.

**16. What is a transaction?**

A transaction is a sequence of one or more SQL operations that are treated as a single unit of work.

**17. What is ACID in databases?**

ACID stands for Atomicity, Consistency, Isolation, and Durability, ensuring reliable processing of database transactions.

**18. What is a stored procedure?**

A stored procedure is a precompiled collection of SQL statements stored in the database.

**19. What is a trigger?**

A trigger is a set of SQL statements that automatically executes in response to certain events on a table.

**20. What is a cursor?**

A cursor is a database object used to retrieve, manipulate, and navigate through a result set row by row.

**21. What is the purpose of the GROUP BY clause?**

The GROUP BY clause groups rows that have the same values in specified columns into summary rows.

**22. What is the purpose of the ORDER BY clause?**

The ORDER BY clause is used to sort the result set by one or more columns.

**23. What is the difference between UNION and UNION ALL?**

UNION combines the results of two queries and removes duplicates, while UNION ALL includes all duplicates.

**24. What are constraints in SQL?**

Constraints are rules enforced on data columns to ensure data integrity and accuracy.

**25. What is the difference between CHAR and VARCHAR?**

CHAR is a fixed-length string data type, while VARCHAR is a variable-length string data type.

**26. What is a data type?**

A data type defines the kind of data that can be stored in a column, such as INT, VARCHAR, or DATE.

**27. What is normalization form?**

Normalization forms are levels of database normalization, including 1NF, 2NF, 3NF, and BCNF.

**28. What is denormalization?**

Denormalization is the process of combining normalized tables to improve read performance.

**29. What is a database schema?**

A database schema is the structure that defines the organization of data in a database.

**30. What is a materialized view?**

A materialized view is a database object that contains the results of a query and can be refreshed periodically.

**31. What is the difference between INNER JOIN and LEFT JOIN?**

INNER JOIN returns only matching rows from both tables, while LEFT JOIN returns all rows from the left table and matched rows from the right table.

**32. What is a composite key?**

A composite key is a primary key composed of two or more columns that uniquely identifies a record.

**33. What is the purpose of the LIKE operator?**

The LIKE operator is used to search for a specified pattern in a column.

**34. What is the COALESCE function?**

The COALESCE function returns the first non-null value in a list of expressions.

**35. What is a self-join?**

A self-join is a join in which a table is joined with itself to compare rows within the same table.

**36. What is a cross join?**

A cross join returns the Cartesian product of two tables, combining all rows from both tables.

**37. What is a SQL injection?**

SQL injection is a code injection technique that exploits vulnerabilities in an application's software by injecting malicious SQL code.

**38. What is the difference between a function and a stored procedure?**

Functions return a value and can be used in expressions, while stored procedures do not return a value and are executed using a CALL statement.

**39. What is a sequence?**

A sequence is a database object that generates a sequence of numeric values for use in primary keys.

**40. What is an aggregate query?**

An aggregate query uses aggregate functions to compute a single value from multiple rows.

**41. What is an execution plan?**

An execution plan is a detailed roadmap that SQL Server creates to show how a query will be executed.

**42. What is the purpose of the HAVING clause?**

The HAVING clause is used to filter groups created by the GROUP BY clause based on a condition.

**43. What is a recursive query?**

A recursive query is a query that references itself to retrieve hierarchical data.

**44. What is a temporary table?**

A temporary table is a table that is created and exists temporarily during a database session.

**45. What is the purpose of the RANK function?**

The RANK function assigns a unique rank to each row within a partition of a result set.

**46. What is a non-clustered index?**

A non-clustered index is an index that maintains a separate structure from the data table and can speed up data retrieval.

**47. What is the purpose of the EXPLAIN statement?**

The EXPLAIN statement is used to obtain information about how a SQL query will be executed.

**48. What is data warehousing?**

Data warehousing is the process of collecting and managing data from various sources to provide meaningful insights.

**49. What is a fact table?**

A fact table is a primary table in a data warehouse that stores quantitative data for analysis.

**50. What is a dimension table?**

A dimension table is a table that contains attributes related to the data in a fact table, providing context.

**51. What is OLAP?**

OLAP (Online Analytical Processing) is a category of software technology that enables analysts to analyze data from multiple perspectives.

**52. What is OLTP?**

OLTP (Online Transaction Processing) is a class of systems that manage transaction-oriented applications.

**53. What are triggers used for?**

Triggers are used to automatically perform actions in response to specific events on a table, such as inserts, updates, or deletes.

**54. What is the difference between a clustered and a non-clustered index?**

A clustered index determines the physical order of data in a table, while a non-clustered index is a separate structure that references the data.

**55. What is the SQL Server Agent?**

SQL Server Agent is a component of SQL Server that executes jobs, monitors SQL Server, and automates tasks.

**56. What is the purpose of the SQL Profiler?**

SQL Profiler is a tool for monitoring and analyzing SQL Server events and performance.

**57. What is a BLOB?**

A BLOB (Binary Large Object) is a data type used to store large binary data such as images, audio, and video.

**58. What is a UDF?**

A UDF (User-Defined Function) is a function defined by the user to encapsulate reusable logic within SQL.

**59. What is the purpose of the TEMPORARY keyword?**

The TEMPORARY keyword is used to create a temporary table that exists only for the duration of the database session.

**60. What is the difference between DDL and DML?**

DDL (Data Definition Language) deals with database structure, while DML (Data Manipulation Language) deals with data manipulation.

**61. What is a data dictionary?**

A data dictionary is a centralized repository of metadata that describes the structure of database objects.

**62. What is the difference between TRUNCATE and DELETE?**

TRUNCATE removes all rows from a table without logging individual row deletions, while DELETE removes rows one at a time and can be rolled back.

**63. What is a full-text index?**

A full-text index is an index that enables fast and efficient searches on large text-based columns.

**64. What is the purpose of the SET NOCOUNT ON statement?**

The SET NOCOUNT ON statement stops the message indicating the number of affected rows from being returned after a SQL statement.

**65. What is a schema in SQL?**

A schema is a collection of database objects, including tables, views, and procedures, organized within a database.

**66. What is a data type conversion?**

Data type conversion is the process of converting a value from one data type to another.

**67. What is the purpose of the CASE statement?**

The CASE statement allows conditional logic in SQL queries, enabling different outputs based on conditions.

**68. What is a self-referential relationship?**

A self-referential relationship occurs when a table has a foreign key that references its own primary key.

**69. What is the purpose of the DISTINCT keyword?**

The DISTINCT keyword is used to return only unique values in a result set.

**70. What is a surrogate key?**

A surrogate key is an artificially created key, typically a sequential number, used to uniquely identify a record.

**71. What is a business rule?**

A business rule is a statement that defines or constrains some aspect of a business, often guiding how data is stored and processed.

**72. What is an ETL process?**

ETL (Extract, Transform, Load) is the process of extracting data from sources, transforming it into a suitable format, and loading it into a target database.

**73. What is a pivot table?**

A pivot table is a data summarization tool that allows data to be reorganized and summarized in a way that enhances data analysis.

**74. What is the purpose of the SQL Server Management Studio (SSMS)?**

SSMS is an integrated environment for managing SQL Server infrastructure and writing T-SQL queries.

**75. What is a deadlock?**

A deadlock occurs when two or more transactions are waiting for each other to release resources, causing them to be unable to proceed.

**76. What is an execution context?**

The execution context is the environment in which a stored procedure or function runs, determining access to variables, permissions, and resources.

**77. What is a join condition?**

A join condition is a condition used to match rows from two or more tables in a join operation.

**78. What is an outer join?**

An outer join returns all rows from one table and the matched rows from the other table, filling in NULLs for unmatched rows.

**79. What is a data model?**

A data model is a conceptual representation of data structures, showing how data is organized and related.

**80. What is the purpose of the EXECUTE statement?**

The EXECUTE statement is used to execute a stored procedure or dynamic SQL query.



**81. What is an optimizer in SQL?**

The optimizer is a component of the database engine that determines the most efficient way to execute a given SQL query.

**82. What is a data type precision?**

Precision refers to the maximum number of digits that can be stored in a numeric data type.

**83. What is an SQL Server instance?**

An SQL Server instance is a standalone installation of SQL Server, with its own set of system databases and configurations.

**84. What is an ANSI SQL?**

ANSI SQL is the standard SQL syntax defined by the American National Standards Institute.

**85. What is the purpose of the MERGE statement?**

The MERGE statement is used to perform insert, update, or delete operations based on whether a record exists in a target table.

**86. What is a constraint violation?**

A constraint violation occurs when a database operation conflicts with defined rules or constraints on data.

**87. What is a base table?**

A base table is a table that physically stores data in a database.

**88. What is a data retention policy?**

A data retention policy is a guideline for how long data should be stored and when it should be deleted.

**89. What is a replication in SQL Server?**

Replication is the process of copying and distributing data from one database to another to maintain consistency.

**90. What is a change data capture (CDC)?**

CDC is a feature that captures changes to data in a table and makes the changes available for processing.

**91. What is a linked server?**

A linked server is a connection to an external data source that allows SQL Server to execute commands against it.

**92. What is a cross-platform database?**

A cross-platform database is a database system that can run on multiple operating systems.

**93. What is a multi-tenancy in databases?**

Multi-tenancy is an architecture where a single database instance serves multiple clients or tenants.

**94. What is an SQL function?**

An SQL function is a stored program that returns a single value and can be used in SQL expressions.

**95. What is a database snapshot?**

A database snapshot is a read-only static view of a database at a specific point in time.

**96. What is an audit in SQL?**

An audit is a systematic examination of database operations to ensure compliance with regulations and policies.

**97. What is an attribute in a database?**

An attribute is a property or characteristic of an entity, represented as a column in a database table.

**98. What is a relation in database terms?**

A relation is a set of tuples sharing the same attributes, often represented as a table.

**99. What is a column family in NoSQL databases?**

A column family is a structure that contains rows, which consist of columns that are stored together for efficient retrieval.

**100. What is schema-on-read?**

Schema-on-read is a flexible data model where the schema is applied to data when it is read, rather than when it is written.

