**SQL Questions:**

1. What is RDBMS? :: RDBMS stands for Relational Database Management Systems. It is basically a program that allows us to create, delete, and update a relational database. A Relational Database is a database system that stores and retrieves data in a tabular format organized in the form of rows and columns.
2. What is a schema? :: A database schema is a **logical representation of data** that shows how the data in a database should be stored logically. It shows how the data is organized and the relationship between the tables. Database schema contains table, field, views and relation between different keys like [primary key](https://www.geeksforgeeks.org/primary-key-in-dbms/), [foreign key](https://www.geeksforgeeks.org/foreign-key-constraint-in-sql/).
3. List the different types of relationships in SQL. :: one to one – user password; one to many-class student; many to many-course to student
4. What are tables and Fields? ::Every column is field.
5. What is a primary key? :: In the relational model of databases, a primary key is a specific choice of a minimal set of attributes that uniquely specify a tuple in a relation. Informally, a primary key is "which attributes identify a record," and in simple cases constitute a single attribute.
6. What is a unique key? :: A unique key is a set of one or more than one fields/columns of a table that uniquely identify a record in a database table. You can say that it is little like primary key but it can accept only one null value and it cannot have duplicate values.
7. What is a foreign key? :: In the relational databases, a foreign key is a field or a column that is used to establish a link between two tables.
8. What is the difference between CHAR and VARCHAR2 datatype in SQL? :: The fundamental difference between CHAR and VARCHAR is that the CHAR data type is fixed in length, while the VARCHAR data type supports variable-length columns of data.
9. What is a ‘constraint’? :: SQL constraints are used to specify rules for the data in a table.

NOT NULL - Ensures that a column cannot have a NULL value

UNIQUE - Ensures that all values in a column are different

PRIMARY KEY - A combination of a NOT NULL and UNIQUE. Uniquely identifies each row in a table

FOREIGN KEY - Prevents actions that would destroy links between tables

CHECK - Ensures that the values in a column satisfies a specific condition

DEFAULT - Sets a default value for a column if no value is specified

CREATE INDEX - Used to create and retrieve data from the database very quickly.

1. Explain the constraints available in SQL?
2. What is the main reason to add constraints to a table? :: Constraints are used to limit the type of data that can go into a table. This ensures the accuracy and reliability of the data in the table. If there is any violation between the constraint and the data action, the action is aborted. Constraints can be column level or table level.
3. What is the difference between primary key and unique constraints? :: The difference between a UNIQUE constraint and a Primary Key is that per table you may only have one Primary Key but you may define more than one UNIQUE constraints. Primary Key constraints are not nullable. UNIQUE constraints may be nullable.
4. What is an index? :: Indexes are used to retrieve data from the database more quickly than otherwise. The users cannot see the indexes, they are just used to speed up searches/queries.
5. What is Auto Increment? :: The auto increment in SQL is a feature that is applied to a field so that it can automatically generate and provide a unique value to every record that you enter into an SQL table. This field is often used as the PRIMARY KEY column, where you need to provide a unique value for every record you add.
6. What is the purpose of aggregate functions? :: In database management an aggregate function is a function where the values of multiple rows are grouped together as input on certain criteria to form a single value of more significant meaning.

1) Count()

2) Sum()

3) Avg()

4) Min()

5) Max()

1. Explain the aggregate functions available in SQL.
2. What are the scalar functions in SQL? Give an example? ::Scalar functions are the built-in functions in SQL, and whatever be the input provided to the scalar functions, the output returned by these functions will always be a single value.

UCASE()

LCASE()

MID()

LENGTH()

ROUND()

NOW()

FORMAT()

1. Explain the scalar functions available in SQL.
2. What is the SELECT statement? :: Select is used to access the records from one or more database tables and views. It also retrieves the selected data that follow the conditions we want.
3. What is CLAUSE? :: SQL clause helps us to retrieve a set or bundles of records from the table.

SQL clause helps us to specify a condition on the columns or the records of a table.

1. What are some common clauses used with SELECT query in SQL? ::WHERE,GROUP BY,HAVING,ORDER BY
2. Which SQL clause is used to restrict the rows returned by a query? ::LIMIT Clause
3. Which clause should you use to exclude group results? ::HAVING Clause
4. Explain how GroupBy is used in query? Group by clause is placed after the where clause in the SQL statement. The Group By clause is specially used with the aggregate function, i.e., max (), min (), avg (), sum (), count () to group the result based on one or more than one column.
5. How “Having” clause will work? ::HAVING is used after GROUP BY clause
6. What is the relationship between Having & GroupBy clause. :: TABLENAME **GROUP** **BY** COLUMNNAME **HAVING** CONDITION;
7. Explain how OrderBy is used in query? ::  The ORDER BY clause in SQL will help us to sort the data based on the specific column of a table. This means that all the data stored in the specific column on which we are executing the ORDER BY clause will be sorted.
8. Which operator is used in query for pattern matching? Explaing with examples. LIKE

The percent sign % represents zero, one, or multiple characters

The underscore sign \_ represents one, single character

1. What is the difference between BETWEEN and IN operators in SQL? :: The BETWEEN operator is utilized to compare two values inside a range, whereas the IN operator is utilized to compare a value with a set of values.
2. Are NULL values same as blank space? : Null indicates there is no value within a database field for a given record. It does not mean zero because zero is a value. Blank indicates there is a value within a database but the field is blank.
3. What is a join?

JOIN:

SQL Join statement is used to combine data or rows from two or more tables based on a common field between them.

INNER JOIN

LEFT JOIN

RIGHT JOIN

FULL JOIN

NATURAL JOIN

INNER JOIN:

The INNER JOIN keyword selects all rows from both the tables as long as the condition is satisfied. This keyword will create the result-set by combining all rows from both the tables where the condition satisfies i.e value of the common field will be the same.

We can also write JOIN instead of INNER JOIN. JOIN is same as INNER JOIN.

LEFT JOIN:

This join returns all the rows of the table on the left side of the join and matches rows for the table on the right side of the join. For the rows for which there is no matching row on the right side, the result-set will contain null. LEFT JOIN is also known as LEFT OUTER JOIN.

RIGHT JOIN:

RIGHT JOIN is similar to LEFT JOIN. This join returns all the rows of the table on the right side of the join and matching rows for the table on the left side of the join. For the rows for which there is no matching row on the left side, the result-set will contain null. RIGHT JOIN is also known as RIGHT OUTER JOIN.

FULL JOIN:

FULL JOIN creates the result-set by combining results of both LEFT JOIN and RIGHT JOIN. The result-set will contain all the rows from both tables. For the rows for which there is no matching, the result-set will contain NULL values.

NATURAL JOIN:

Natural join can join tables based on the common columns in the tables being joined. A natural join returns all rows by matching values in common columns having same name and data type of columns and that column should be present in both tables.

Both tables must have at list one common column with same column name and same data type.

1. What is Inner Join?
2. How “Outer Join” works?
3. What is Full Join?
4. What is Self-Join? In what situation you will use Self Join?

A self join is a regular join that is used to join a table with itself. It basically allows us to combine the rows from the same table based on some specific conditions. It is very useful and easy to work with, and it allows us to retrieve data or information which involves comparing records within the same table.

1. What is a Natural Join?
2. What is subquery? :: In SQL a Subquery can be simply defined as a query within another query. In other words we can say that a Subquery is a query that is embedded in WHERE clause of another SQL query.
3. What are the types of subquery? :: Single-row subquery,

multiple row subquery,

multiple column subquery,

correlated subquery, and

nested subquery

1. What are similarities between Subqueries & Joins? :: both used to combine data from different tables into a single result.
2. What are differences between Subqueries & Joins? ::An SQL Join statement is used to combine data or rows from two or more tables based on a common field between them. A subquery is a query that is nested inside a SELECT , INSERT , UPDATE , or DELETE statement, or inside another subquery.
3. What is the difference between DELETE and TRUNCATE commands? :: DELETE is a SQL command that removes one or multiple rows from a table using conditions. TRUNCATE is a SQL command that removes all the rows from a table without using any condition.
4. What is the difference between TRUNCATE and DROP statements? :: The DROP command is used to remove table structure and its contents. Whereas the TRUNCATE command is used to delete all the rows/records from the table, it will not remove the table structure.
5. What are Entities and Relationships?

An entity may be any object, class, person or place. In the ER diagram, an entity can be represented as rectangles.

Consider an organization as an example- manager, product, employee, department etc. can be taken as an entity.

One to one – person and passport

One to many – scientist and invention

Many to many – Student and course

1. What is data Integrity?
2. What is de-normalization, and when do you go for it?
3. What is a Stored Procedure?

SELECT – WHERE

GROUP BY – HAVING