



# SQL Query

## Interview Questions

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Q1. What is the difference between clustered and non-clustered index in SQL?

Ans- The differences between the clustered and non-clustered index in SQL are :

1. Clustered index is used for easy retrieval of data from the database and its faster whereas reading from non- clustered index is relatively slower.
2. Clustered index alters the way records are stored in a database as it sorts out rows by the column which is set to be clustered index whereas in a non-clustered index, it does not alter the way it was stored but it creates a separate object within a table which points back to the original table rows after searching.

Q2. Write a SQL query to display the current date?

Ans- In SQL, there is a built-in function called Get Date() which helps to return the current timestamp/date.

Q3. What are Entities and Relationships?

Ans- Entities: A person, place, or thing in the real world about which data can be stored in a database. Tables store data that represents one type of entity. For example – A bank database has a customer table to store customer information. The customer table stores this information as a set of attributes (columns within the table) for each customer.

Relationships: Relation or links between entities that have something to do with each other. For example – The customer name is related to the customer account number and contact information, which might

be in the same table. There can also be relationships between separate tables (for example, customer to accounts).

Q4. What is an Index?

Ans- An index refers to a performance tuning method of allowing faster retrieval of records from the table. An index creates an entry for each value and hence it will be faster to retrieve data.

Q5. Explain different types of index in SQL.

Ans- There are three types of index in SQL namely:

**Unique Index:**

This index does not allow the field to have duplicate values if the column is unique indexed. If a primary key is defined, a unique index can be applied automatically.

**Clustered Index:**

This index reorders the physical order of the table and searches based on the basis of key values. Each table can only have one clustered index.

**Non-Clustered Index:**

Non-Clustered Index does not alter the physical order of the table and maintains a logical order of the data. Each table can have many nonclustered indexes.

Q6. What is Normalization and what are the advantages of it?

Ans- Normalization in SQL is the process of organizing data to avoid duplication and redundancy. Some of the advantages are:

- ☐ Better Database organization
- ☐ More Tables with smaller rows
- ☐ Efficient data access
- ☐ Greater Flexibility for Queries
- ☐ Quickly find the information
- ☐ Easier to implement Security
- ☐ Allows easy modification
- ☐ Reduction of redundant and duplicate data
- ☐ More Compact Database
- ☐ Ensure Consistent data after modification

Q7. What is the difference between DROP and TRUNCATE commands?

Ans- DROP command removes a table and it cannot be rolled back from the database whereas TRUNCATE command removes all the rows from the table.

What are the differences between OLTP and OLAP?

OLTP stands for online transaction processing, whereas OLAP stands for online analytical processing. OLTP is an

online database modification system, whereas OLAP is an online database query response system.

### **Q8. How to create empty tables with the same structure as another table?**

#### **To create empty tables:**

Using the INTO operator to fetch the records of one table into a new table while setting a WHERE clause to false for all entries, it is possible to create empty tables with the same structure. As a result, SQL creates a new table with a duplicate structure to accept the fetched entries, but nothing is stored into the new table since the WHERE clause is active.

Ans- There are many successive levels of normalization. These are called normal forms. Each consecutive normal form depends on the previous one. The first three normal forms are usually adequate.

Normal Forms are used in database tables to remove or decrease duplication. The following are the many forms:

#### **First Normal Form:**

When every attribute in a relation is a single-valued attribute, it is said to be in first normal form. The first normal form is broken when a relation has a composite or multi-valued property.

#### **Second Normal Form:**

A relation is in second normal form if it meets the first normal form's requirements and does not contain any partial dependencies. In 2NF,

a relation has no partial dependence, which means it has no non-prime attribute that is dependent on any suitable subset of any table candidate key. Often, the problem may be solved by setting a single column Primary Key.

**Third Normal Form:**

If a relation meets the requirements for the second normal form and there is no transitive dependency, it is said to be in the third normal form.

Q9. What is OLTP?

Ans- OLTP, or online transactional processing, allows huge groups of people to execute massive amounts of database transactions in real time, usually via the internet. A database transaction occurs when data in a database is changed, inserted, deleted, or queried.

What are the differences between OLTP and OLAP?

OLTP stands for online transaction processing, whereas OLAP stands for online analytical processing. OLTP is an online database modification system, whereas OLAP is an online database query response system.

Q10. How to create empty tables with the same structure as another table?

Ans- To create empty tables:

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Q11. What are SQL comments?

SQL Comments are used to clarify portions of SQL statements and to prevent SQL statements from being executed. Comments are quite important in many programming languages. The comments are not supported by a Microsoft Access database. As a result, the Microsoft Access database is used in the examples in Mozilla Firefox and Microsoft Edge.

Single Line Comments: It starts with two consecutive hyphens (–).

Multi-line Comments: It starts with /\* and ends with \*/.

Q12. What is the difference between the RANK() and DENSE\_RANK() functions?

The RANK() function in the result set defines the rank of each row within your ordered partition. If both rows have the same rank, the next number in the ranking will be the previous rank plus a number of duplicates. If we have three records at rank 4, for example, the next level indicated is 7.

13. Explain the difference between RANK and DENSE\_RANK functions in Oracle SQL.

RANK and DENSE\_RANK both assign rankings to result rows.

With RANK, when two or more rows have the same values, they'll be assigned the same rank, and the subsequent rank will be skipped.

Meanwhile, DENSE\_RANK provides a consecutive ranking and doesn't leave gaps in ranking even when duplicate values exist.

14. What is the purpose of the UNION operator in Oracle SQL?

The UNION operator combines the results of two or more SELECT queries into a single result set – as if it came from a single query. It merges the rows from different queries, removes duplicate rows, and presents a unified result.

15. Name one advantage of using indexes in a database.

Indexes improve query performance through quicker data retrieval by reducing the need for full table scans.

16. Differentiate between the WHERE clause and the HAVING clause in Oracle SQL.

The WHERE clause filters rows before grouping – that is, before they're included in the result set. Filtering is also based on certain conditions.

The HAVING clause, on the other hand, filters data post-grouping – meaning after aggregation.



17. How does the Oracle Query Optimizer determine an execution plan for a query?

It uses heuristics or rules of thumb and statistics to decide on the most efficient execution plan based on available indexes, table size, and query complexity.

18. What is the key difference between ROW-level and STATEMENT-level triggers in Oracle?

ROW-level triggers fire once for each affected row, therefore allowing row-specific actions.

STATEMENT-level triggers are executed only once for the entire statement. This is regardless of the number of affected rows and is more suitable for actions that don't depend on individual rows.

19. What do the COMMIT and ROLLBACK statements in Oracle SQL do?

The COMMIT statement saves all the changes made in a transaction to the database, making them permanent. The ROLLBACK statement undoes the changes in the transaction and reverts the database to its pre-transaction state.

20. What are some advantages of using bind variables in Oracle SQL?

Bind variables improve performance through caching and reusing, reducing the need for parsing. Bind variables also protect against SQL injection attacks, require minimal maintenance, and reduce memory usage.