

● SQL Interview Questions(Mixed)

- **Question:** What is the difference between an INNER JOIN and a LEFT JOIN?
- **Answer:** An INNER JOIN returns rows when there is a match in both tables. A LEFT JOIN returns all rows from the left table, and the matched rows from the right table. If there's no match, the result is NULL on the right side.
- **Question:** What is the primary key?
- **Answer:** A primary key is a column or a set of columns that uniquely identifies each row in a table. It cannot contain NULL values and there must be a unique value for each row.
- **Question:** What is normalization and why is it important?
- **Answer:** Normalization is the process of organizing data in a database to reduce redundancy and improve data integrity. It ensures that data is stored logically and efficiently.
- **Question:** How do you retrieve unique values from a column?
- **Answer:** **DISTINCT** keyword.
- For example, **SELECT DISTINCT column_name FROM table_name;**
- **Question:** What is the purpose of the **HAVING** clause in SQL?
- **Answer:** The **HAVING** clause is used to filter the results of a GROUP BY clause based on a condition. It's similar to the WHERE clause but operates on aggregated data.
- **Question:** How would you find the second highest salary from a table?
- **Answer:**
 - **SELECT MAX(salary)**
 - **FROM table_name**
 - **WHERE salary NOT IN (SELECT MAX(salary) FROM table_name);**
- **Question:** What is the difference between **WHERE** and **HAVING** clause?
- **Answer:** **WHERE** is used to filter records before they are grouped, while **HAVING** is used to filter aggregated results after the GROUP BY clause.
- **Question:** What is the difference between **UNION** and **UNION ALL**?
- **Answer:** **UNION** combines the results of two or more SELECT statements and removes duplicates. **UNION ALL** does the same but includes duplicates.
- **Question:** What does the **LIKE** operator do?
- **Answer:** The **LIKE** operator is used to search for a specified pattern in a column. Wildcards (%) and (_) can be used with the LIKE operator.
- **Question:** What is a SQL View?
- **Answer:** A view is a virtual table based on the result set of an SQL statement. It contains rows and columns, just like a real table, but doesn't store data.

- **Question:** How would you count the number of rows in a table?
- **Answer:** You can use the **COUNT()** function: **SELECT COUNT(*) FROM table_name;**
- **Question:** What is the difference between a clustered and a non-clustered index?
- **Answer:** A clustered index determines the physical order of data in a table. A table can have only one clustered index. Non-clustered indexes are logical pointers to data rows and a table can have multiple non-clustered indexes.
- **Question:** How do you delete all records from a table without deleting the table itself?
- **Answer:** You can use the **DELETE** statement: **DELETE FROM table_name;**
- Alternatively, **TRUNCATE table_name;** can be used, which is faster but doesn't activate triggers.
- **Question:** What is a foreign key?
- **Answer:** A foreign key is a column or set of columns in a table that is used to establish a link between the data in two tables. It enforces referential integrity within the database.
- **Question:** What is the difference between **CHAR** and **VARCHAR** data types?
- **Answer:** **CHAR** is a fixed-length character data type, meaning that it reserves a specified amount of space regardless of the actual size of the data. **VARCHAR** is a variable-length data type and only uses the space required for the actual data.
- **Question:** What is SQL injection and how can it be prevented?
- **Answer:** SQL injection is a code injection technique where malicious SQL statements are inserted into an entry field for execution. It can be prevented by using parameterized queries, escaping user input, and employing input validation.
- **Question:** What is the use of the **COALESCE** function?
- **Answer:** **COALESCE** returns the first non-NULL value in a list. It's used to replace NULL values with a specified replacement value.
- **Question:** What is a stored procedure?
- **Answer:** A stored procedure is a precompiled group of SQL statements that can be executed as a single command. It can accept parameters and return values.
- **Question:** How would you fetch alternate records from a table?
- **Answer:** One way is to use the modulo operator. For example, to fetch alternate rows starting from the first record: **SELECT * FROM table_name**
 - **WHERE id % 2 = 1;**
- **Question:** What is a self-join and why would you use it?
- **Answer:** A self-join is a join in which a table is joined with itself. It's used to compare rows within the same table, such as finding pairs with similar data in two columns.