

Ace Your Next Data Analyst Interview With SQL



Core SQL Foundations

- Explain the difference between WHERE and HAVING.
- What are the different types of SQL JOINS?
- Describe the difference between UNION and UNION ALL.
- What is the purpose of the CASE statement?
- How do you remove duplicate records from a query result?



Data Retrieval & Filtering

- How would you find the second highest salary from a table?
- Write a query to select all employees whose name starts with 'A'.
- How do you filter for records that contain a null value?
- Retrieve the top 5 most recent orders from a table.
- Explain how the LIKE operator is used with wildcards.



Aggregation & Grouping

- What is the difference between `COUNT(*)` and `COUNT(column_name)`?
- How do you calculate a cumulative sum or running total?
- Find the department with the highest average salary.
- Calculate the month-over-month sales growth percentage.
- Get a count of orders per customer for only those with more than 5 orders.



Advanced Query Techniques

- What is a correlated subquery and how does it work?
- Explain the purpose of Common Table Expressions (CTEs).
- How would you rank rows without using the `RANK()` function?
- Describe a scenario where you would use a self-join.
- Compare using a subquery versus a CTE for readability.



Data Modification & Management

- What is the difference between DELETE, TRUNCATE, and DROP?
- How would you update prices for a specific product category?
- Write a query to insert data from one table into another.
- Explain the concept of ACID properties in databases.
- What is a transaction and why is it important?



Window Functions

Mastery

- Explain the difference between RANK, DENSE_RANK, and ROW_NUMBER.
- How do you use the LAG and LEAD functions?
- Calculate a 7-day moving average of sales using a window function.
- Partition data by department to calculate internal rankings.
- What is the frame clause in a window function?



Database Design & Theory

- What is the difference between a primary key and a unique key?
- Explain database normalization and its benefits.
- Describe the different types of relationships between tables.
- What is an index and how does it improve query performance?
- Define a foreign key and its role in relational databases.



Scenario-Based Problem Solving

- How would you find users who made purchases two days in a row?
- Design a query to identify the employee with the nth highest salary.
- Calculate the retention rate of users from one month to the next.
- How would you merge two tables with slightly different schemas?
- Describe your process for troubleshooting a slow-running query.



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