AUTODESK

Data Engineering Interview Questions

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Job Details

- **Position:** Data Engineer
- **Experience:** 4+ years
- **Location:** Bangalore
- **Work mode:** Hybrid
- **Compensation:** ₹25-30 LPA
- **Total Rounds:** 4
- **Top Required Skills:**

1. Advanced SQL
2. Python for Problem Solving
3. Apache Spark
4. Data Modeling & Warehousing
5. Snowflake

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Round 1
Online Coding Round

1.Python (Arrays / Two Pointers)

- Given a sorted array of integers and a target value, check if there exists a pair of numbers that adds up to the target. Solve it using the two-pointer technique.
- Follow-up: What is the time and space complexity of your solution?

2.SQL (Joins + Window Functions)

- Write a query to return the second highest salary per department using ROW_NUMBER() or RANK().
- Write a query to list employees who have never been managers, using a self-join.

Round 2
Technical Deep Dive

Python

1. Writea function to check whether two strings are anagrams of each other. Optimize for time complexity and explain your approach.
2. Given a list of numbers, write a list comprehension to duplicate each element. Example:
   - Input: [1, 2, 3]
   - Output: [1, 1, 2, 2, 3, 3]

SQL

1. Recursive CTE Question:
2. Given an Employee table with columns (emp_id, emp_name, manager_id), write a query to get the entire reporting hierarchy of each employee up to the CEO.
   - Bonus: Also show the level/depth of each employee in the hierarchy.
3. Window Function Question:
4. Given a Sales table (region, product, revenue), write a query to find the top 3 products by revenue in each region using RANK() or DENSE_RANK().

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Snowflake

1. Explain theSnowflake architecture:
    - How does Snowflake separate compute and storage?
    - What are micro-partitions and why are they important?
2. What is Zero Copy Cloning in Snowflake?
    - How does it work internally?
    - Give an example of when you would use it.

Spark

1. What is the difference between coalesce() and repartition()?
    - Which one triggers a shuffle?
    - When would you prefer one over the other?
2. Explain the Spark architecture.
    - What are the roles of the Driver, Executors, and Cluster Manager?
3. Define Job, Stage, and Task in Spark.
    - Can you walk through how a Spark SQL query (like groupBy + aggregation) is broken down into jobs, stages, and tasks?

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Round 3

System Design&Data Modeling

1. What is Dimensional Modeling? Explain the difference between fact tables and dimension tables.
2. Differentiate between OLAP and OLTP systems. Provide real-world use cases for each.
3. Compare Star Schema vs Snowflake Schema.
    - Which would you choose for a large-scale reporting system, and why?

Case Study — Movie Booking System

- Design a dimensional model for a Movie Booking Application (like BookMyShow).
- Tasks:
    - Identify the Fact tables (e.g., FactBookings, FactPayments).
    - Identify the Dimension tables (e.g., DimUser, DimMovie, DimTheatre, DimDate, DimPaymentMethod).
    - Define attributes for each dimension.
    - Show the relationships between fact and dimension tables.
    - Discuss normalization vs denormalization and justify your schema choice.
    - Demonstrate how to calculate metrics like:
        - Daily ticket sales per movie
        - Occupancy rate per theatre
        - Revenue per city

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Round 4

Behavioral & Managerial

1. Walk me through one of your most impactful projects.
2. What problem were you solving?
3. What design choices did you make?
4. What was the outcome?
5. Scenario Question: Tell me about a time when you had to work with conflicting requirements. How did you handle it?
6. Team Conflict: Describe a conflict you faced in your team.
7. What caused it?
8. How did you resolve it?
9. How do you prioritize tasks when working under strict deadlines?
10. Where do you see yourself in the next 2–3 years?

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Thank You

Best of luck with your upcoming interviews — you've got this!

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