Data Engineering Interview Questions

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Job Details

- **Position:** Cloud Data Engineer
- **Experience:** 5+ years
- **Location:** Gurgaon/ Pune/ Bangalore
- **Work mode:** Hybrid
- **Compensation:** ₹32+ LPA
- **Total Rounds:** 6
- **Top Required Skills:**

1. Data Structures & Algorithms
2. Advanced SQL
3. Cloud & Big Data Tools
4. System Design for Data Engineering
5. Problem-solving & Cognitive Ability
6. Behavioral

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Round 1
Recruiter Call

1. Background walkthrough: education, past roles, cloud/data engineering projects.
2. Why Google? – Motivation and alignment with company values.
3. Discussion of skills: experience with data pipelines, cloud tools (GCP/AWS), SQL, Spark/Beam.
4. Outline of process: recruiter explained 4–5 interview rounds.
5. Expectations on coding, SQL, cloud design, and Googliness.

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Round 2
Technical Phone Screen

1. Coding (DSA):
    a. Given an array of integers, find the longest subsequence with alternating even and odd numbers.
    b. Optimize to O(n) using sliding window.
2. SQL:
    a. Write a query to calculate 7-day rolling active users for a product.
    b. Follow-up: Optimize the query for BigQuery (partitioned tables, avoiding cross joins).
3. Pipeline Design:
    a. Scenario: Given a stream of user events (login, click, purchase), design a pipeline to deduplicate by session and aggregate actions.
    b. Expected: Use Pub/Sub → Dataflow (Beam) → BigQuery.
    c. Discuss handling of late-arriving events.
4. Case Question:
    a. “Design a 3-seater movie theatre where payment is only cash.”
    b. Test: Candidate’s ability to design schema for bookings, constraints for limited seats, and transaction safety (atomic updates).

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Round 3
Technical Onsite/Virtual

1. Coding:
    - Implement an algorithm to flatten a nested dictionary into key-value pairs.
    - Solve binary tree lowest common ancestor problem.
2. SQL:
    - Given a table events(user_id, event_time, event_type):
        - Find the first event of each user in a session.
        - Find conversion rate: users who added to cart → purchased within 7 days.
    - Follow-up: How to optimize for billions of rows in BigQuery.

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Round 4
Technical Onsite/Virtual

1. System Design:
    a. “Design a pipeline to ingest real-time stock market data and make it available for analytics within seconds.”
    b. Expected components: Pub/Sub for ingestion, Dataflow for processing, BigQuery for storage, Looker for analytics.
    c. Discuss: batch vs real-time trade-offs, scaling, late events.
2. Warehouse Design:
    a. “Design an Uber-like application Data Warehouse.”
    b. Fact table: Trips (trip_id, rider_id, driver_id, start_time, end_time, fare).
    c. Dimensions: Date, Rider, Driver, Location, Payment Method.
3. Optimization Question:
    a. How do you handle OOM in Spark/Dataflow pipelines?
    b. Techniques: partitioning, windowing, checkpointing, state management.

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Round 5
Cognitive Ability Round

1. Business Pitch: “How would you sell Google Cloud to a non-technical consumer?”
2. Monetization: “How could Google monetize the Chrome browser beyond ads?”
3. Critical Thinking: If you had to design a data product with half the infra cost, what trade-offs would you make?

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Round 6
Behavioral (Googliness) Interview

1. “Tell me about a time you solved a challenging data pipeline issue under pressure.”
2. “How do you handle conflicting stakeholders when both demand different data outputs?”
3. “Give an example where you introduced an innovation in pipeline design.”
4. “Describe a time you mentored juniors or influenced design decisions.”
5. Deep dive into past projects: architecture, scale, and challenges.
6. Examples of real-time vs batch pipelines you’ve implemented.
7. How you optimized queries/pipelines for cost and performance.
8. Team collaboration: working with PMs, analysts, data scientists.
9. Career aspirations at Google and your role fitment.

Thank You

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

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