**Freecharge Data Engineer Interview Guide – Experienced 2+**

**Round 1: Technical Interview**

**Introduction & Background Discussion**

 Briefly introduced myself, my educational background, and my journey transitioning into data engineering.

 Described my current role and day-to-day responsibilities.

 Shared insights about my personal and professional projects, emphasizing my experience with MySQL, Python, and Big Data tools.

**Conceptual and Coding Questions**

 **Explain the Software Development Life Cycle (SDLC) and compare it with the**

**Waterfall model.**

While I clarified my limited exposure to SDLC from my electronics background, I confidently pivoted to my strong points in databases and data processing frameworks.

 **SQL Question:** What is a window function? Explain with an example.

 **SQL Query Problem:** Solve a query using window functions and GROUP BY to rank or aggregate data.

 **Coding Problem:** Write a program to find the frequency of each character in a string.

Discussed different approaches using Python, including using collections. Counter.

**Big Data and Spark-Related Questions**

 **What is Apache Spark?** Describe its architecture and main use cases.

 **What do you understand by data shuffling in Spark?** Why is it important?

 **Difference between cache() and persist() in Spark.** When would you use each?

 **Types of joins in Spark.** Explained inner, outer, left, and right joins with examples.

 **Optimization techniques in Spark.** Discussed techniques like using broadcast joins, partitioning, and avoiding shuffles.

**AWS Service-Specific Questions**

 **Limitations of AWS Glue and Lambda.** What are some challenges when working with these services?

 **Explain job bookmarking in AWS Glue.** How does it help in incremental data processing?

**Additional Questions for Preparation**

1. How would you troubleshoot a slow Spark job?

2. Explain the role of DAGs (Directed Acyclic Graphs) in Spark.

3. What are some best practices for writing efficient SQL queries?

**Round 2: Technical Interview**

**Introduction and Role Discussion**

 Introduced myself again, providing a refresher on my background and technical expertise.

 Discussed my current job role in detail, highlighting major achievements and responsibilities.

**AWS and Data Engineering Discussion**

 Explained a project where I used the AWS Data Engineering stack, detailing the architecture, key services used, and challenges faced.

 **AWS Services Overview:** Discussed services like S3, Glue, Lambda, and Redshift, and their role in data pipelines.

**Problem-Solving and Behavioral Questions**

 **Describe a challenging situation at work and how you handled it.**

 **What optimization strategies do you use in data pipelines?**

 **How do you monitor and log data pipelines in AWS? Additional Questions for Preparation**

1. What’s your approach to data versioning in a data lake?

2. Explain the difference between batch and streaming data processing.

3. How would you design a scalable data ingestion pipeline?

**Round 3: HR Interview**

**Personal and Role-Fit Questions**

 **Self-introduction** with a focus on my career journey and future aspirations.

 **Why are you leaving your current role?** Discussed growth opportunities and my desire to work on more complex data engineering challenges.

**Salary and Offer Discussion**

 **Salary expectations and negotiation.** Clarified my compensation requirements based on market standards and my experience.

 **Availability and preferred location.** Confirmed my notice period and discussed remote/hybrid work preferences.