Altimetrik Data Engineer Interview Guide – Experienced 3+

Round 1: Core Concepts and Project Experience

1. Self-Introduction and Project Explanation

The interview began with a standard introduction where the interviewer asked:

- **Tell me about yourself and your experience.**
- **Explain your recent projects in detail.**

Tips:

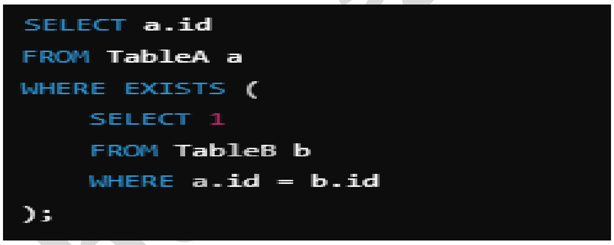
- Highlight your most relevant projects, focusing on your role, tools/technologies used, challenges faced, and solutions implemented.
- Clearly differentiate between AWS and GCP projects, focusing on unique aspects.

2. Conceptual Questions

1. **Semi-Join**

   Definition: A semi-join retrieves rows from a table where matching rows exist in another table but does not return the matching rows.

   Example:



```
SELECT a.id
FROM TableA a
WHERE EXISTS (
     SELECT 1
     FROM TableB b
     WHERE a.id = b.id
);
```

2. **Cross-Join**

   Definition: A cross-join produces a Cartesian product of two tables.

   Tip: Mention its use case in scenarios where all combinations of rows are needed.

3. **Primary Key vs. Secondary Key**

   Primary Key: Uniquely identifies a row in a table and cannot be null.

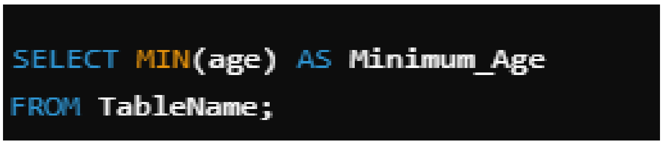
   Secondary Key: A key used to improve query performance, often as an index.

4. **Foreign Key**

   Definition: A field in one table that links to the primary key in another table, establishing relationships.

5. **Minimum Age Query**

   SQL:



```
SELECT MIN(age) AS Minimum_Age
FROM TableName;
```

3. Airflow Questions

1. **Initiating a DAG**

   Create a Python file in the DAGs folder and define a DAG using airflow.models.DAG.

2. **Operators in Airflow**

   Operators are tasks in a DAG, such as PythonOperator, BashOperator, DummyOperator, etc.

3. **Concept of Task**

   A task is a unit of work in a DAG, defining what operation needs to be performed.

Round 2: Advanced Concepts and Scenario-Based Questions

1. Big Data Tools

1. **Hadoop Commands for Get and Merge**

   hadoop fs -get /source/path /local/path

   hadoop fs -merge /source/path /target/file

2. **Hadoop Architecture**

   Discuss NameNode, DataNode, and Secondary NameNode, emphasizing HDFS and YARN

3. **Spark Context vs. Spark Session**

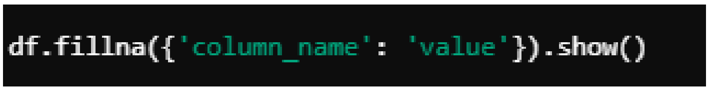
   Spark Context: Entry point for older Spark versions, managing the Spark application.

   Spark Session: Unified entry point introduced in Spark 2.0, encapsulating both Spark Context and SQL Context.

2. Specific Scenarios and Concepts

1. **Null Value Handling in a Single Column**

   Use fillna or replace in PySpark:



```
df.fillna({'column_name': 'value'}).show()
```

2. **YARN**

   A resource manager for Hadoop, allocating resources and scheduling tasks across the cluster.

3. **Map vs. FlatMap**

   Map: Applies a function to each element, producing one output per input.

   FlatMap: Applies a function to each element and flattens the results.

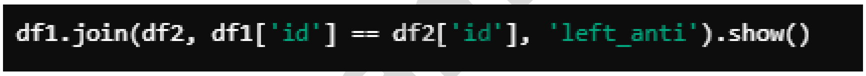
4. **Sqoop Incremental Import**

   Use --incremental append or --incremental lastmodified for incremental imports.

5. **Left Anti Join**

   Use case: Finding rows in the left table that don’t have matching rows in the right table.

   Example:



```
df1.join(df2, df1['id'] == df2['id'], 'left_anti').show()
```

3. Cloud and Spark-Related Questions

1. **Web API Reading**

   Use libraries like requests or urllib in Python for API data ingestion, then transform and load it into the target system.

2. **Scala Traits**

   Definition: Traits are similar to interfaces in Java, allowing multiple inheritance.

3. **Executor Memory in Spark**

   Stores RDD partitions, caches data, and performs computations.

4. **Broadcasting in Spark**

   Used to efficiently distribute large read-only data across all nodes.

4. Databricks and Delta Lake

1. **dbutils Function**

   Used for managing files, secrets, and jobs in Databricks.

   Example: dbutils.fs.mv(source, destination)

2. **Moving Files in DBFS**

   Command: dbutils.fs.mv('/source/path', '/destination/path')

3. **Job Cluster in Databricks**

   Create a cluster via the Databricks UI or CLI and specify the cluster mode as "Job".

4. **Lazy Evaluation in Spark**

   Spark evaluates transformations only when an action (like count or collect) is triggered.

5. **Managed vs. External Tables**

   Managed Table: Spark manages the metadata and data storage.

   External Table: Data is stored outside Spark, and only metadata is managed.

6. **Delta Lakehouse Architecture**

   Combines the benefits of data lakes and data warehouses. Supports ACID transactions, schema enforcement, and real-time analytics.

7. **Bronze/Silver/Gold Layers**

   Bronze: Raw data.

   Silver: Cleaned and validated data.

   Gold: Aggregated and business-ready data.

8. **Deployment Process**

   Use CI/CD pipelines to move code from Dev to QA/Prod.

9. **Scheduling Jobs in Databricks**

   Use the Databricks Jobs UI to define tasks, set dependencies, and schedule triggers.

Glassdoor Altematrik Review –

https://www.glassdoor.co.in/Reviews/Altimetrik-Reviews-E630148.htm

Altematrik Careers –

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