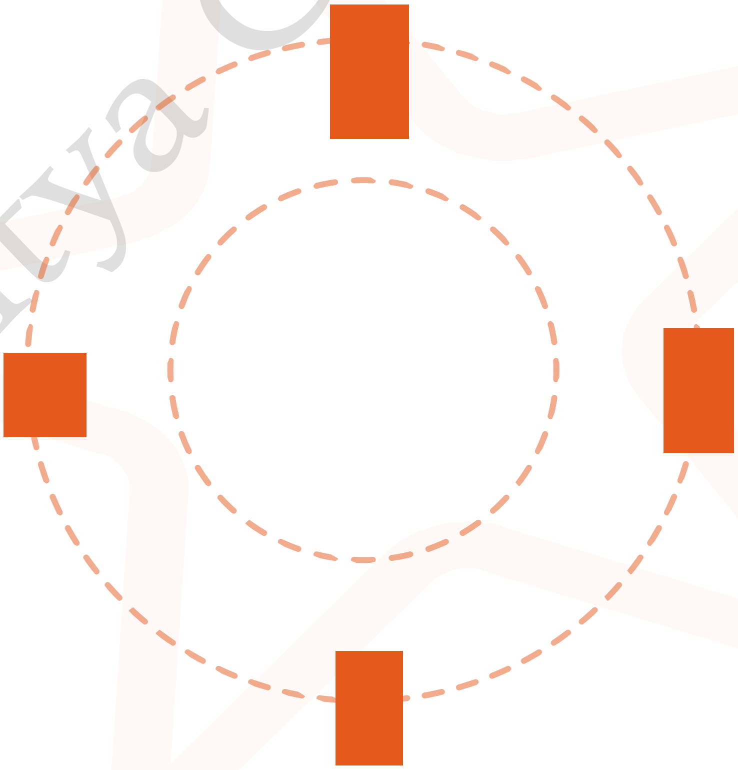
Nitya CloudTech Pvt Ltd.

PySpark Scenario-Based Interview Questions & Answers



📌 ROUND 1: Technical Interview (60 Minutes)

1. Tell me about your project and challenges you faced?
Candidate:
I explained the details of my recent project where I developed a **Data Pipeline using PySpark**. One of the challenges I faced was handling large volumes of data with multiple sources and ensuring optimal data loading times. I tackled this by implementing **incremental data loads** and optimizing **Spark queries** using caching and partitioning.

2. Difference between Incremental load and Full load?
Candidate:
In **full load**, the entire dataset is loaded every time. In **incremental load**, only the new or modified data since the last load is processed, which reduces load time and resource usage.

3. How much data are you loading daily? Any scenario-based questions related to the project?
Candidate:
I load around **X TB of data daily**, primarily from transactional systems. I explained the **ETL pipeline architecture** I used, and how we ensured **data consistency** during large-scale loads.

4. What is the difference between PySpark and Pandas?
Candidate:
While **Pandas** is optimized for **single-node** operations on smaller datasets, **PySpark** is built for **distributed computing**, which allows it to handle larger datasets across multiple nodes in a cluster.

5. Spark Optimization Techniques?
Candidate:
Some techniques include **caching**, **partitioning**, **broadcast joins**, **repartitioning**, and **increasing shuffle partitions** to avoid bottlenecks and reduce processing time.

6.
Spark architecture?
Candidate:
The **Spark architecture** consists of **Driver**, **Executors**, and **Cluster Manager**. The **Driver** controls the execution, while **Executors** execute tasks, and the **Cluster Manager** allocates resources to executors.

7. Top 3 salaries in the department?
Candidate:
I shared insights about how **compensation trends** are set based on market benchmarks and internal company policies, focusing on roles in **data engineering**, **machine learning**, and **data science**.

8. OLTP vs OLAP?
Candidate:
OLTP (Online Transaction Processing) systems handle high-volume transactional data, while **OLAP (Online Analytical Processing)** systems are designed for complex queries and data analysis, typically used in business intelligence.

9. What is SCD? Types?
Candidate:
SCD (Slowly Changing Dimensions) refers to handling changes in data over time. The main types are:

- **SCD Type 1**: Overwrite old data with new.
- **SCD Type 2**: Add new records to maintain history.
- **SCD Type 3**: Store limited historical data in the same record.

📌 ROUND 2: Technical + Managerial Interview (60 Minutes)

1. Project details? More scenario questions related to the project?
Candidate:
I shared detailed insights about my **ETL project**, the challenges we faced, and how I optimized data transformation using **PySpark**. I also

walked through
scalability and **performance improvements** we implemented.

2. Row() to column() change problem in both SQL and Python?
Candidate:
I explained the process of converting **rows to columns** using **pivoting** in SQL, and using **Pandas' pivot_table** function in Python to achieve the same.

3. What is salting?
Candidate:
Salting is a technique used to handle **data skew** in Spark by adding a random value (a “salt”) to partition keys, which ensures that data is evenly distributed across partitions.

4. Spark optimizations?
Candidate:
I discussed various **Spark optimizations**, such as using **broadcast joins** for small datasets, **caching** data for repeated access, **repartitioning** data for more balanced partitions, and configuring **spark.sql.shuffle.partitions** for optimal performance.

5. File formats in Spark and its use cases?
Candidate:
I explained the benefits of **Parquet** (optimized for columnar storage and performance), **ORC** (used in Hive and also columnar), and **CSV/JSON** (more flexible but slower for large datasets) depending on the use case.

6. How do you handle Data skewness?
Candidate:
I explained how I handle **data skew** by using **salting** for key columns, **broadcast joins** for small tables, and using **Spark’s skew hints** to manage skewed data more efficiently.

7. Why are you changing companies? Why are you asking for a 100% hike?
Candidate:

I
emphasized my growth aspirations and the desire to work with a **leading organization** like DBS, where I can expand my skills and contribute to **cutting-edge data projects**. The 100% hike request was based on industry standards and the value I can bring to the team.

8. Suppose if you joined DBS Bank and the person you have to take K.T. (Knowledge Transfer) from has a difficult personality. How would you handle it?
Candidate:
I would approach the situation with **empathy** and **professionalism**, ensuring clear communication and patience, while trying to understand their perspective. If required, I would escalate to a **manager** to ensure smooth knowledge transfer.

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