Technical Assessment

Role: Senior Data Engineer (Data Engineering Team)

Overview

Your task is to develop the backend for a shopping cart microservice. This service is crucial for managing the process during and after a purchase, ensuring that all data is securely stored in a NoSQL database. The flow begins with an API call, which should be handled through a resilient mechanism, leading to successful data persistence. Since this flow is critical, any data loss directly translates to lost revenue.

The suggested payload for the message includes the following fields:

- `buyer_id`: int
- `product_id`: int
- `number_of_installments`: int
- `total_amount`: double
- `purchase_date`: date

Requirements

- Use a framework of your choice in Python.
- Follow industry best practices.
- Build your solution using AWS services.
- Employ Infrastructure as Code (IaC) to create necessary resources.
- Ensure the flow is asynchronous.
- Implement a fallback mechanism to prevent message loss.
- Include alert mechanisms for any issues with the fallback system.

Deliverables

- Provide an architectural diagram of your proposed solution.
- Additionally, present a Medallion Data Lake architecture that receives the data provided by your solution and generate analytics data to be consumed by Data Analysts.
- Explain the reasoning behind your design choices.
- Implement your solution with as much rigor as you're comfortable, focusing on providing more detail for key components as needed.
- Your code must be zipped and sent to us.
- Since resilience is a priority, it's desirable that you also develop test cases.

- Within the 4-hour time limit, feel free to use pseudocode or documentation to help us understand your approach, priorities, and how you manage your workflow. As such, you will be assessed on the quality and craft of what you choose to include in your implementation.