Question

SuperMart Ecommerce Application incurs cost whenever Customer places an order and cancels it later point of time. In order to find the reason for this Customer behavior, SuperMart conducted the Survey. Based on the Survey results, it is identified that there are two major issues while placing an order on SuperMart's Website.

1. Customer adds item to the Cart and logs off from the Session. After 2 days when customer remembers about the order and adds the item to the cart forgetting that same item is ordered before.
2. Customer places a order successfully with a list of items and order is in processing state. After few days Customer accidentally places the same order

In order to resolve this issue, SuperMart requires an application feature to identify the possible duplicate order from Customer's existing shopping cart or from purchase history and provide warning.

If there was exact match of the item from the cart or from purchase history, then application need to provide sufficient information like Order Date, Quantity to confirm their order details are valid.

Design High Level Real-time Big Data Analytics to implement the Order Duplication Identification and issue alerts. Please mention the list of technologies, tools which will be used for this application and significance of why this tool is selected over other frameworks/tools. Also design the data model to store the Order History of the Customer. Write code to store the Order details and read the Order History details for each new order when there is duplicate order is placed by the Customer.

Assume each add/change event to the cart is sent as a message to the Application Backend. Write code to receive these messages and persist it if needed as per your design. Lookup Order History or Cart History to identify any duplicate item in the cart. This action should happen if the time difference between 2 events is greater than 4 hours for cart add/change event. In case of new order event, it should compared with the last 5 Order History and alert if duplicate item found. Also choose appropriate topic name for each event in the Customer Order Journey in alignment to the Design.

Expected Solution Artifacts

1. High Level Design how data ingestion implemented
2. Choice of technologies and tools
3. Data Model Design to store and retrieve Purchase History or active Cart Details
4. Topic Names
5. Sample code to consume the events from Topic and persist in No-SQL Database
6. Sample Code to retrieve the Purchase History or Active Cart Details to validate with Current Order Details