Case 1: Spare parts business | Operations Management

Problem Statement:

YSK retailers sell spare parts for Air conditioners and refrigerators. Due to high demand, YSK retailers decided to procure spare parts from various vendors across the country. However, the lead time for each vendor is different. After raising Purchase Orders (PO), YSK retailers realised that lead time has enormous variations. It is observed that the lead time ranges from 1 day to 30 days. Receiving goods from vendors started from Oct 1, 2022, till Oct 30, 2022. YSK retailers use MySQL to maintain vendor and FG tables for data validation. One vendor can deliver multiple spare part types on different dates. At times, there are situations where

I. vendors delivered the goods every day. II. vendors delivered the goods on alternative days.

III. vendors delivered the goods in bulk in one day. IV. It is not necessary that vendors must deliver the goods every day.

V. There are instances where no deliveries are transacted in a day.

The inbound manager entered the cumulative number of spare parts received from the vendors daily. YSK retailers successfully meet the market demand for spare parts during peak season. They are left out with fewer N-class (Non-moving) items. Their accounts payable (45 days) duration is approaching, and they need to pay their vendors based on the number of items they have supplied. When evaluating their G/L (General Ledger) accounts, they realised that the amount mentioned in the vendor invoice was not in line with the quantities received from a few vendors. The Finance department asked the inventory team for the quantities received from the vendors. As data is stored in the database, the Inventory team must run an SQL query to print the unique number of vendors who delivered the items at least once daily. The finance team asked for the vendor code and name of who delivered the maximum number of items in a day. If more than one vendor delivered a maximum number of items, they require the primary vendor code. Now the task for the inventory team is to retrieve data and print the information for each day of the delivery, sorted by the date.

(1. *Assume that YSK retailers maintain hundreds of tables on their database, and it is hard to check manually.*

2. Transaction_ID is a communication protocol generated at every activity performed on the application interface)

Vendor

Column	Type
Vendor_code	Integer
Vendor_name	String

Delivery

Column	Type
Delivery_date	Date
Transaction_ID	Integer
Vendor_code	Integer
Quantity_delivered	Integer

Vendor Table:

Vendor_code	Vendor_Name
2357	Vendor A
1245	Vendor B
1328	Vendor C
1479	Vendor D
1208	Vendor E
6547	Vendor F
8732	Vendor G
9087	Vendor H
5432	Vendor I
7431	Vendor J

Sample Delivery table:

Delivery_Date	Transaction_ID	Vendor_code	Qty_delivered
1-10-2022	90078	6547	10
10-10-2022	65322	5432	20
3-10-2022	45998	1208	5
24-10-2022	23468	6547	40
15-10-2022	41267	9087	55
6-10-2022	98764	7431	70
1-10-2022	12389	1328	10
8-10-2022	23087	1328	25
3-10-2022	18743	2357	15
18-10-2022	09867	5432	20
11-10-2022	19875	1479	44
12-10-2022	65439	1245	62
17-10-2022	06543	9087	71
7-10-2022	18976	7431	35
1-10-2022	27659	8732	20
5-10-2022	10765	8732	17

16-10-2022	39854	2357	23
18-10-2022	07549	1245	34
16-10-2022	18905	1208	54
20-10-2022	28976	1479	65
28-10-2022	35087	1328	23
22-10-2022	40157	1245	75
13-10-2022	52317	8732	45
4-10-2022	18954	7431	15
15-10-2022	39854	1208	25
11-10-2022	29870	5432	20
7-10-2022	54097	6547	32
20-10-2022	17650	9087	45
14-10-2022	81270	2357	51
30-10-2022	95439	1479	60