**Final Project**

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# CIS-525: Applied Data Structure

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**Entity Relationship Diagram:**

A picture containing timeline

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Looking at the large retail store company database, here are the of the reports for upper management to consider.

1. If you have to potentially terminate 5 employees, who should they be?

* **SELECT EMPLOYEE\_ID, CONCAT(EMP\_FNAME,' ',EMP\_LNAME) as EMP\_NAME, COUNT(INV\_NUM) AS SALES\_MADE,LGEMPLOYEE.EMP\_HIREDATE from LGINVOICE join LGEMPLOYEE on LGINVOICE.EMPLOYEE\_ID = LGEMPLOYEE.EMP\_NUM group by EMPLOYEE\_ID order by COUNT(INV\_NUM), LGEMPLOYEE.EMP\_HIREDATE LIMIT 5 ;**

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* When it comes to terminating an employee, various factors must be considered, including underperformance, the individual's wage, timeliness, work discipline, and work experience. Employee and department data are included in the dataset for a large retail store. For the termination of five employees, I considered the employee's ID, the number of sales they made, which reflects their performance, and the employee's hire date, which reflects how long they've worked. Employee hire date and Employee Sales made are indicators of an employee's performance based on their time with the organization. In this situation, despite having worked for the company for the longest time, Franklyn Stower made the least number of sales, and he takes the employee commission of 5%. This demonstrates that this employee has not improved since his start date. Doug Caudill and Danica Castle, on the other hand, were employed relatively recently in 2004 and 2005, and the corporation has the right to fire them if their sales decline. And for Jamie Felton and Tom Hobson, the sales made by them is comparatively low. Because there are so many departments, I can't identify who is paid well and who is underperforming, therefore I didn't consider compensation history. According to me, upper management can consider these 5 top employees who can be terminated based on their work experience and their work performance in the company. The reason I did not consider salary history is because I can’t tell who is paid well and underperforming considering there are so many departments.

2. What vendor should they consider getting more products from?

* **SELECT LGVENDOR.VEND\_ID AS VENDOR\_ID, LGVENDOR.VEND\_NAME AS VENDOR\_NAME, LGSUPPLIES.PROD\_SKU,SUM( LGPRODUCT.PROD\_PRICE) AS PRODUCT\_SELLINGPRICE,SUM(LGLINE.LINE\_PRICE) AS PRODUCT\_COSTPRICE,SUM( LGPRODUCT.PROD\_PRICE)-SUM(LGLINE.LINE\_PRICE) AS PROFIT FROM LGSUPPLIES JOIN LGVENDOR ON LGVENDOR.VEND\_ID=LGSUPPLIES.VEND\_ID JOIN LGPRODUCT ON LGPRODUCT.PROD\_SKU=LGSUPPLIES.PROD\_SKU JOIN LGLINE ON LGPRODUCT.PROD\_SKU=LGLINE.PROD\_SKU GROUP BY LGPRODUCT.PROD\_SKU ORDER BY PROFIT DESC;**

Graphical user interface

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* I analyzed the vendor’s name, product sku, product cost price from the vendor, product selling price from the company, and the profit made by the firm by factoring the cost price and the selling price of the product to find out the top vendors the company should be obtaining their products from. Prod line price refers to the price at which the company purchased products from vendors, whereas Prod price refers to the price at which the company sells the product. I added up the product price and product line prices and used the difference to calculate the company's profit. I linked two tables, Vendor and Supplies, and grouped and arranged them by PROD SKU and Profit. Vendors Warren Paints Consolidated and Mt Blanchard Solvents Supplies made the most and repeated the company's profit for different items, according to the table. As a result, these are the vendors from whom the company should consider purchasing more products.

3. Who are the 10 customers that the sales department should contact soon?

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* Customers are frequently contacted by the sales department to enhance corporate sales by gaining more customers. For this, I looked at two options. The first is where I considered the sum of invoice total as the amount spent and count of invoice number as number of purchases from the store by customers, and I linked the invoice table with customer table to get a clear impression of how many times the customer visited the store in 2016 and how much amount they spent. This query will provide the number of purchases made by customers from our store as well as the total amount spent throughout their visits. I just considered the year 2016 to obtain a sense of the customer's annual purchases. Based on customers yearly purchases, the table gives 10 customers the sales department should soon contact.

For year 2016:

* **SELECT CONCAT(LGCUSTOMER.CUST\_FNAME,' ',LGCUSTOMER.CUST\_LNAME) AS CUSTOMER\_FULLNAME,LGCUSTOMER.CUST\_CODE, SUM(LGINVOICE.INV\_TOTAL) AS AMOUNT\_SPENT, COUNT(LGINVOICE.INV\_NUM) AS NUMBER\_OF\_PURCHASES\_FROM\_STORE FROM LGCUSTOMER JOIN LGINVOICE ON LGCUSTOMER.CUST\_CODE=LGINVOICE.CUST\_CODE WHERE LGINVOICE.INV\_DATE LIKE '2016%' GROUP BY LGCUSTOMER.CUST\_CODE ORDER BY SUM(LGINVOICE.INV\_TOTAL) DESC,COUNT(LGINVOICE.INV\_NUM) DESC LIMIT 10;**

For the second choice, I considered the city and state of the stores, as well as the number of purchases made by customers at the stores. This allows us to determine which store in which state receives the most customer visits. Sales department can target those customers to enhance our sales by offering them discounts and rewards if we know the geographical places where our store receives the most visits from customers. The sales staff should contact these ten people as soon as possible based on the information on the table.

* **SELECT CONCAT(LGCUSTOMER.CUST\_FNAME,' ',LGCUSTOMER.CUST\_LNAME) AS CUSTOMER\_FULLNAME,LGCUSTOMER.CUST\_CODE,LGCUSTOMER.CUST\_CITY,LGCUSTOMER.CUST\_STATE, SUM(LGINVOICE.INV\_TOTAL) AS AMOUNT\_SPENT, COUNT(LGINVOICE.INV\_NUM) AS NUMBER\_OF\_PURCHASES\_FROM\_STORE FROM LGCUSTOMER JOIN LGINVOICE ON LGCUSTOMER.CUST\_CODE=LGINVOICE.CUST\_CODE GROUP BY LGCUSTOMER.CUST\_CODE ORDER BY SUM(LGINVOICE.INV\_TOTAL) DESC,COUNT(LGINVOICE.INV\_NUM) DESC LIMIT 10;**

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Description automatically generated with medium confidence

4. What is your top suggestion for increasing revenues for the company?

* **Select LGCUSTOMER.CUST\_STATE AS STATE, SUM(LGINVOICE.INV\_TOTAL) AS INCOME\_GENERATED\_FROM\_SALES FROM LGCUSTOMER JOIN LGINVOICE ON LGCUSTOMER.CUST\_CODE=LGINVOICE.CUST\_CODE GROUP BY LGCUSTOMER.CUST\_STATE ORDER BY SUM(LGINVOICE.INV\_TOTAL);**

A computer screen capture

Description automatically generated with medium confidence

* We can consider several elements to enhance the company's revenue, such as the maximum number of stores visited by customers, the biggest sales and profit of the company, and so on. I considered the store's geographic locations as well as the biggest sales from each state. This allows us to evaluate which states should be targeted to increase sales revenue. From the table, we may target stores in Pennsylvania, New York, and North Carolina to enhance sales by offering customers in those states’ greater discounts and rewards, which will increase sales revenue.

Additional insights:

The organization should define and stick to a target that allows employees to improve their performance, which will boost the company's overall performance. There are a variety of other techniques to boost the company's revenue. To encourage customers to explore new products, the company could implement various reward programs. If the quantity of products sold increases, so will the number of supplies purchased from the seller, resulting in a higher commission for the vendors. Furthermore, more data is required to obtain a detailed picture of the occurrences affecting continuing sales and corporate performance. Also, clients have a large balance on their account that they must pay off. While our sales staff should contact these clients to see if they would purchase anything else and maintain track of their typical purchases, they should also keep a record of their transactions. The number of supplies in the ER diagram is directly tied to number of products, which means that if the number of supplies changes, the number of sales will fluctuate as well. We can also target specific brands that have the highest number of sales in various stores throughout various states. As a result, we will be able to enhance sales of those brands while also promoting more products associated with them. These, in my opinion, are some of the additional insights I observed that can help the company's overall revenue.