Team Report 1

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IS 410: Introduction to Database Design

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Dear Client,

To support your rapid growth and new business direction, we've enhanced your data infrastructure with five new entities designed to handle increased complexity and scale. These updates ensure the wholesale club is ready to manage expanded logistics, new revenue streams, and detailed operational tracking. The new entities include Delivery Order, Delivery Center, Lessee, Contract, and Overhead, each playing a key role in keeping the business running smoothly. The Delivery Order entity helps track orders from start to finish, including shipping status, costs, and items in each order. This means the company can keep better tabs on deliveries and related expenses. The Delivery Center entity makes it easier to manage different types of locations, distinguishing between retail stores and distribution hubs for improved organization and resource allocation. We've also added the Lessee entity to manage store spaces rented out to external businesses. This connects with the Contract entity, which holds all the details of leasing agreements and ties in employees who handle these contracts, like lawyers or administrative staff. To help the finance team, we've introduced the Overhead entity, which records expenses like utility bills and payrolls at specific locations, helping project future costs and plan budgets more effectively. These updates make sure your database is ready to support your new ventures and keep up with the pace of growth. With a stronger system in place, you're equipped to handle expanded delivery services, lease management, and financial tracking with ease, ensuring that you stay ahead in their market.

We have developed a view for your business that displays all of the information about the current ongoing delivery orders including when it was ordered and when it will be delivered. This view provides many use cases for your business as it is crucial to understand what is going on with your delivery orders currently at any time. This view can be used and manipulated in other queries which allows you to find patterns in what is being ordered and how big of a demand your business currently has. This information will provide your business with an edge against the competition by fully understanding what is providing revenue to your business from online orders at this current moment.

Defining a view that shows the currently active delivery orders

```
CREATE VIEW vw_Active_Delivery_Orders AS
SELECT Delivery_Order.*, Transaction.Order_Date, Transaction.Transaction_ID,
Transaction.Customer_ID
FROM Delivery_Order
JOIN Transaction ON Delivery_Order.Delivery_Order_ID =
Transaction.Delivery_Order_ID
WHERE Delivery_Date > GETDATE();
```

A procedure that gives the contract details for a specific space at a location based on contract duration

```
CREATE PROCEDURE GetEndingContracts @locationID INT, @spaceDetails
VARCHAR(255), @days INT AS
SELECT Contracts.contractID, Contracts.sign_date, Contracts.expirationdate,
Contracts.price, Contracts.contract_length, Contracts.LocationID, Contracts.LesseeID,
Contracts.spaceDetails, Lessee.Name AS LesseeName, Location.Address
CASE
WHEN Contracts.contract_length <= 180 THEN 'Short'
WHEN Contracts.contract_length BETWEEN 181 AND 364 THEN 'Medium'
ELSE 'Long'
END AS ContractCategory
FROM Contracts
JOIN Lessee ON Contracts.LesseeID = Lessee.LesseeID
JOIN Location ON Contracts.LocationID = Location.LocationID
WHERE Contracts.LocationID = @locationID AND Contracts.spaceDetails =
@spaceDetails AND DATEDIFF(DAY, GETDATE(), Contracts.expirationdate) <= @days
ORDER BY Contracts.expirationdate ASC;
```

10 Questions:

1. Using the view, what is the largest ongoing delivery order's ID and price

```
SELECT TOP 1 Delivery_Order_ID, Total_Price
FROM vw_Active_Delivery_Orders
ORDER BY Total_Price DESC;
```

2. Using the view, what are the 5 oldest ongoing delivery order's ID, delivery date, and order date?

```
SELECT TOP 5 Delivery_Order_ID, Delivery_Date, Order_Date
FROM vw_Active_Delivery_Orders
ORDER BY OrderDate DESC;
```

3. Using the view, what are the most common items in ongoing delivery orders?

```
SELECT Stock.Item_Name, COUNT(Item_ID) AS Item_Count
FROM vw_Active_Delivery_Orders
JOIN Stock ON Delivery_Order.Item_ID = Stock.Item_ID
ORDER BY Item_Count DESC;
```

4. Using the view, how many delivery orders are currently in progress?

```
SELECT COUNT(Delivery_Order_ID) AS Delivery_Order_Count
FROM vw_Active_Delivery_Orders;
```

5. Executing the procedure, what are the contract details for lesse's with contracts that end within the month (30 days)?

```
EXEC GetEndingContracts @locationID = 101, @spaceDetails = 'Space B2', @days = 30;
```

6. Executing the procedure, what are the contract details for lesse's with contracts that end within the year (365 days)?

```
EXEC GetEndingContracts @locationID = 102, @spaceDetails = 'Space A1', @days = 365;
```

7. Who are the customers that use the delivery service the most frequently?

```
SELECT Transactions_T.Customer_ID, Transactions_T.Transaction_ID,
COUNT(Delivery_Order_T.Delivery_Order_ID) AS Delivery_count
FROM Transactions_T
LEFT JOIN Delivery_Order_T ON Transactions_T.Delivery_Order_ID =
Delivery_Order_T.Delivery_Order_ID
GROUP BY Transactions_T.Customer_ID, Transactions_T.Transaction_ID
ORDER BY Delivery_count DESC;
```

8. Which location is the delivery service used the most?

```
SELECT Location_T.Address, Location_T.Location_ID,
COUNT (Delivery_Order_T.Delivery_Order_ID) AS Delivery_count
FROM Location_T
LEFT JOIN Delivery_Center_T ON Location_T.Delivery_Center_ID =
Delivery_Center_T.Delivery_Center_ID
GROUP BY Location_T.Address, Location_T.Location_ID
ORDER BY Delivery_count DESC
LIMIT 1;
```

9. What delivery orders have contracts but are not associated with overhead costs?

```
SELECT Delivery_Order_T.Delivery_Order_ID, Contracts_T.ContractID,
Contracts_T.sign_date, Contracts_T.expirationdate
FROM Delivery_Order_T
JOIN Contracts_T ON Delivery_Order_T.Contract_ID = Contracts_T.Contract_ID
LEFT OUTER JOIN Overhead_T ON Delivery_Order_T.Center_ID =
Overhead_T.Center_ID
WHERE Overhead_T.Cost_Amount IS NULL;
```

10. Which delivery orders have been delayed beyond their expected delivery date, and how many days overdue are they?

```
SELECT Delivery_Order_T.Delivery_Order_ID, Delivery_Order_T.Delivery_Date,
DATEDIFF(DAY, Delivery_Order_T.Delivery_Date, GETDATE()) AS
Days_Overdue
FROM Delivery_Order_T
WHERE Delivery_Order_T.Delivery_Date < GETDATE()
AND Delivery_Order_T.Status = 'In progress';
```

With this database, we can understand what your organization does and how performance can be optimized. Using views, stored procedures, and more joins, you can have a better understanding of what delivery orders are in place at this time. You can determine top ordering items or the highest value delivery orders by analyzing data from the vw_Active_Delivery_Orders view. Such insights can aid your organization to get a clear picture of product demand that helps you focus on high-revenue products while also honoring customer commitment by allocating resources efficiently.

The GetEndingContracts stored procedure significantly enhances your organization's ability to manage leasing operations with efficiency and foresight. By allowing users to input key parameters such as location, specific space details, and a timeframe, the procedure provides immediate access to contracts that are nearing expiration. This enables your organization to approach lease renewals with ample time for decision-making. Additionally, the categorization of contracts into “short,” “medium,” or “long” durations aids in prioritizing which leases require immediate focus and which can be addressed in the future. This feature supports seamless lease management, allowing rented spaces to remain operational.

The other SQl components included in the system deliver valuable insights that go further than standard data tracking. For example, the query that identifies overdue delivery orders and calculates how many days they are delayed enables you to act swiftly, you will be able to address challenges before they escalate and impact customer satisfaction. Additionally, queries that highlight delivery orders associated with contracts but lack overhead cost records can reveal inefficiencies that may go unnoticed. These insights can help you streamline operations more effectively. This can ensure that the organization as a whole allocates its resources in a cost-efficient manner. These enhancements can also prepare you with the tools needed to translate data into important actions that will further enhance the overall organization by strengthening the operational strategy within it and preparing it for further growth.