**DBS610 FINAL PROJECT**

**TOPIC: DATABASE DESIGN FOR A CLOTHING STORE**

**(Milestone1 updated)**

**Milestone 2**

Group: 4

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**Introduction**

Gone are the days, we rely on paper records for daily transactions and activities. With the increasingly large amount of data worldwide, Database has become an integral part of businesses and organizations of all sizes. Databases are used in various applications, from simple personal record-keeping to complex enterprise-level systems. With a database, a large amount of data can be managed securely and efficiently. Database designs can be customized to meet specific business needs and requirements. The design of a database plays an important role in determining the quality and efficiency of a database. For a proper design, one needs to identify the problem or the purpose of designing the database, what data needs to be handled, and how the data are related and distributed among various tables. By customizing the database design, businesses can ensure that their data is organized in a way that makes their workflow and processes easier and also enables them to make informed decisions. In this project, we are going to design a database for a clothing store.

**Problem statement**

The cloth store currently relies on manual paper-based records to manage its inventory and sales, leading to inefficiencies and inaccuracies. It happened that even some of the past records were mutilated or missed. It has become a challenging and time-consuming task, especially as the volume of customers and orders increases to properly manage the business. As drawing inferences from a paper-based record is tedious and challenging, there were times certain products were overstocked or understocked. Understocks of products result in lost sale opportunities. Moreover, the paper-based system does not provide real-time insights into customer preferences, purchase history, or feedback making it difficult for the store to improve customer experience. There is a need for a comprehensive database for managing inventory, customer data, employee data, and orders in real-time.

**How will the database assist in providing the solution**

The database can store data regarding the customer, employees, inventory, sales, etc which makes paper-based records obsolete. It can provide a centralized system for managing inventory, sales, customer-related data, employee-related data, and track orders. This can help the store manager to draw conclusions for effective decision-making. The time-consuming and tedious tasks such as tracking orders, knowing the stock level of various products, the total sale for a particular period, etc. can be resolved easily. A well-designed database can assist in providing the following solutions to the cloth store.

1. Efficient inventory management: Information about inventory like the number of items in stock, number of items sold, and number of items ordered, can be retrieved. This makes inventory management efficient so that a product in demand never goes out of stock.
2. Customer Management: Customer information like contact number, email id, address etc can be stored so that new product details can be sent to them. Also, by knowing the customer, personalized recommendations can be made.
3. Sales Management: Sales data like the number of products sold or ordered or shipped on a particular day can be retrieved using the database. This can help the store identify its best-selling products and monitor sales trends.
4. Employee Management: Employee data can be stored and inferences about employees’ attendance and duties can be drawn.
5. Reporting and Analytics: Database makes sales analysis, stock analysis, customer analysis, and profit analysis easier so that data-driven decisions can be made that help improve profitability, sales, and customer satisfaction.
6. Efficiency and productivity: With the introduction of the database, the employees of the store can manage the inventory, customer orders, and sales records more effectively and efficiently without spending additional time or manpower.

Overall the introduction of a database system in the cloth store enables the user to store, retrieve, analyze, integrate, and secure data efficiently and effectively.

**How the database will fit with other potential parts of the system architecture?**

As of date, the cloth store is not exposed to the digital world. Currently, it is not associated with any e-commerce platform. By introducing the database, the cloth store can lay the foundation for digital transformation, enabling it to integrate with other potential parts of the system architecture. For example, the database can be accessed through an e-commerce platform, to provide online sales functionality to customers. The database can also be accessed through a mobile application, for a shop-on-the-go experience for the customer. The database can be integrated with a customer relationship management system for providing personalized customer service by analyzing customer behavior and preferences. By integrating the database with the accounting system, financial management can be streamlined for the cloth store.

Business requirements or rules for the project

The database should provide a holistic management of all the cloth store related interactions. For this the database design needs to facilitate the following:

* Store and retrieve customer information like name, phone number, email, address,
* Store and retrieve employee information like name, phone number, email, address, hire date, office associated, salary, job title.
* Store and retrieve office information like phone number and address.
* Store and retrieve product information like product name, product description, unit price, stock in hand etc.
* Store and retrieve order information like order date, shipping date, order status etc.
* Store and retrieve payment information like date of payment and amount.
* Store and retrieve supplier information like product information, supplier name, phone number, address, etc.
* There should be a login option for customers and employees.
* The customer should be able to rate products.

The database design should be user-friendly enabling employees to efficiently manage store operations and the customers to easily make purchases.

**Design changes made:**

1. We had planned to add employee attendance data also in the employee table, but during normalization, we faced data redundancy issue. So we have avoided that field from the employee table. A separate table is required for storing employee attendance data. We have not implemented the same in this project. But there is scope of implementation.
2. During the project planning, we thought of a one to many relation between product and suppliers, later we identified that the relation is many to many and so included a bridge table called supplier product.