Team 5
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Introduction

The pharmaceutical industry is a vital component of the healthcare sector. It involves the research, development, and production of drugs and medicines. The industry faces several challenges in managing its vast amounts of data effectively, including drug information, clinical trials, patient data, and manufacturing information. To overcome these challenges, a pharma database management system is needed to streamline data management, enhance data security, and ensure compliance with regulations.

This project typically involves designing, developing, and implementing a database, MediTrack, that can store and retrieve information about drugs, patient prescriptions, and medication orders. The database serves as a central repository for all data related to the pharmacy, including customer information, inventory details, medication information, and sales transactions.

Pharmacy databases track drug inventory levels, expiration dates, and ordering patterns. This helps pharmacists to ensure that medications are available when needed and avoid stockouts or excess inventory. The MediTrack database can help pharmacists to monitor medication adherence by tracking when medications are filled, refilled, and picked up. This information helps pharmacists to identify patients who may be struggling to adhere to their medication regimen and offer support and guidance. This database can help identify opportunities to save costs by identifying generic alternatives, ensuring the correct dosage, and identifying potential drug interactions. It can also help public health officials monitor medication usage patterns, which can help to identify potential health risks and take preventive measures.

Our mission objectives are as follows:

- To develop a system that deals with the day to day requirements of any pharmacy.
- To ensure safety, accuracy, and efficiency within the pharmaceutical store.
- To provide a competitive advantage to the pharmacy.

Target Audience

Our pharmacy database is designed to support the day-to-day operations of the pharmacy, ensuring that it is able to operate efficiently, accurately, and in compliance with regulations.

The target audience of our pharmacy database includes:

Target Audience/ who would use it	Ways to use it	Attain what goals
Pharmacy owners or managers	They use the database to manage the pharmacy's operations, such as inventory management, employee management, and sales tracking.	Improve efficiency, streamline business operations, automate manual processes. Increase profitability, identify areas where they can reduce costs.
Pharmacists or employees	Pharmacists use the database to access customer personal, billing information and process sales transactions	Improve efficiency, streamline business operations, automate manual processes. Enhance customer service, provide accurate information about drugs.
Regulatory agencies	Regulators use the database to access the drug information, expiration date and quantity from the inventory.	Regulatory compliance: Ensure compliance with regulations, to identify potential shortages.

Questions that the database will be able to answer:

The MediTrack database can help answer a range of questions related to the operations of the pharmacy.

1. When do medications expire? The database can track expiration dates for medications and alert the pharmacy staff when medications are approaching their expiration dates.
2. For the purpose of efficient Inventory management, the manager wants to know the purchase quantity of drugs for any particular month and year. This will help the manager in determining which drugs to buy in bulk and also determine the kind of contracts he/she wants to make with drug selling companies.
3. The consumption pattern of drugs changes yearly. With the rise in variety of diseases and global outbreaks, the most-selling drugs are different for every year. The Sales manager wants to see the most-selling drugs every year to analyze the trends and patterns and for forecasting purposes.
4. Profitability is an important part of any business. The Pharmacy wants to estimate which drugs are the most profitable for them. This will help the Sales manager and the Relationship manager to enter into long-term contracts for companies whose drugs are sold in the highest number by the Pharmacy.
5. As part of our customer experience, we would like to know how our employees are doing with customer assistance. Are customers who purchase from our pharmacy, helped by Full-time employees or part-time (Hourly)?
6. The total sales figure is a crucial indicator of the pharmacy's success, hence we would like to determine the total sales made by the pharmacy in the last financial year.
7. It's essential to keep track of pharmacy's sales data to identify the top-performing customers. Understanding the purchasing behavior of the customers can help tailor the marketing strategies, improve the inventory management, and ultimately drive sales growth. Prescription Record of the customer who contributed highest to the sales in the last financial year.
8. Knowing the top 5 selling drugs in the pharmacy would help the pharmacy manager to ensure that there is adequate stock of these drugs to meet the demand. Understanding the top-selling drugs would also provide insights into customer preferences and trends.

Potential entities/tables with potential attributes/columns in pharmacy database

The MediTrack database will consist of 8 tables and 3 correlated tables. Tables and their respective attributes have been mentioned below.

1. **Company:** This entity includes attributes such as **cmpName**, cmpPhone, cmpAddress.
2. **Drug:** This entity includes attributes such as **drgBarcode** ,drgName, drgType, drgDose, drgCode, drgCostPrice, drgSellPrice, drgProductionDate, drgExpirationDate, drgQuantity, drgProfit.
3. **Inventory:** This entity includes attributes such as **invId** , invType, invAddress.
4. **Bill:** This entity includes attributes such as **bilId** , bilType, bilPrice, bilDate.
5. **Customer:** This entity includes attributes such as **cstId**, cstName, cstPhone, cstDOB.
6. **Sales: sales_id**, customer_id, bill_id, drug_name, quantity, date
7. **Prescriptions: prescription_id,** customer_id, medication_name, dosage, prescribing_doctor, date
8. **Employee:** This entity includes attributes such as **empId**, empName, empPhone, empAddress, empPassword, empType.
    - HourlyEmployee: This entity includes attributes such as empHourlyRate.
    - FullTimeEmployee: This entity includes attributes such as empSalary, empStockAmount, empPaidLeave.
    - ContractEmployee: This entity includes attributes such as empContractDuration, empContractAmount.

Business Processes

MediTrack would like to design a conceptual database to help them store, manage and retrieve data in the most optimum way. It purchases drugs from Drug-making companies and sells them to customers, therefore acting as a middleman to bridge the gap between the two. The business descriptions of our pharmacy include:

- Each company is described by a unique company Name, company phone number, and company address.

- Each drug is described by a unique drug barcode, drug name, drug type, drug dose, drug code, drug cost price, drug sell price, drug production date, drug expiration date, drug quantity, and company id of the drug.
- Each company produces one or many drugs and one drug is produced by only one company because they try to maximize profit by patenting the drugs.
- Each inventory is described by a unique inventory identifier, barcode of the drug that the inventory contains, inventory type, inventory price, inventory quantity, and inventory data.
- Each inventory contains information about one or more drugs, so basically tells us about the availability in terms of quantity, price, etc. of the drugs.
- Each drug can be a part of multiple inventories as MediTrack may buy the same drug multiple times from the manufacturing company.
- Each bill is described by a unique combination of drug barcode and customer id, bill identifier, bill type, bill price, bill quantity, bill date, and an employee identifier that made the sale.
- Each customer is described by a unique customer identifier, customer name, customer phone, and customer date of birth.
- Each customer can receive one or more bills depending on the drugs that he/she buys and the date of purchase, and each bill can only be received by one customer.
- Each employee is described by a unique employee identifier, employee name, employee phone number, employee address, employee salary, and employee password.
- Each customer can either be assisted by an employee or he/she can choose the self-checkout option and not require employee assistance.
- Each prescription will have a prescription id associated with, one customer can have multiple prescriptions but one prescription will be associated with only one customer.
- Each employee has to assist multiple customers if they avoid using the self-checkout option.

Entities/tables you will not include in the database:

1. Reports: This entity could include attributes such as report ID, report type, date generated, and report data.

2. Insurance: This entity stores information about insurance providers, including their name, address, phone number, and any other relevant information.

Sample data:

The data that we will be using in order to create MediTrack is a hypothetical dataset. We will be using hypothetical values for each of our tables. In order to create an unbiased dataset we will be using a random word/number generator.

The company table will include a list of 10 companies, along with their addresses, from whom MediTrack purchases its medications. Data for 20 different drugs will be included. There will be two alternatives for billing: staff assistance and self check out. The customers table will get information about 15–20 customers. Details about 9–10 employees will be included in the employee table (3-4 for each category). The sales table will give the details of the drug name and its quantity, similarly the prescriptions table will have the drug name, its dosage and the doctor who prescribed them.

- Company ('Fizer', 2404848894, '6210 Belcrest Road, Hyattsville 20782')
- Drug (11290890, 'Advil', 'Prescription' , 2 , '2d00', 23.4, 29.9, '11/07/2022'. '11/09/2023', 12, 6.5, ‘Fizer’)
- Inventory (‘B12456’, 'Warehouse', '3240 Fawn Circle, PA 204567')
- Bill ('I6789', 'Self checkout', 12.45, 12, '04/08/2022', 7890)
- Customer (‘7890’, 'Modi', 9033033666, '08/19/1999')
- Employee (‘700’, 'Rohit', 2405678895, '4330 HeartBreak road, College park 20742', ‘#Rtu78ER’, ‘Hourly’)
    - ➢ HourlyEmployee (‘700’, 23.12)
    - ➢ FullTimeEmployee (‘7001’, 23456.90, 34532.00, 25)
    - ➢ ContractEmployee (‘7002’, 15, 89098)
- Sale (11290890 , '7890', 'I6789' ,’Advil’ ,’8’, ‘21/02/2022’)
- Prescription (‘1’, ‘7890’, ‘Advil’,’30mg’,’Dr. Sakshi Reddy’,’15/04/2022’)