**Mini-Project**

**Pharmacy Management**

Problem Statement:

Pharmacies play a huge role when it comes to the well-being and health of the people. Any discrepancy or mistakes here could end up being extremely costly. Hence, it is important to maintain multiple database systems to manage the flow of data involved in the same and maintain the demand-supply balance and the transparency.

For example, most of the drugs available in a pharmacy cannot be purchased without a prescription. Even with a signed prescription, there is a limit on the quantity that can be purchased. Additionally, pharmacist can do a background check on customer’s medical history to ensure that they are not involved in drug abuse. In addition, there are other laws on the operations of pharmacy like requirement for safe disposal of expired medicine and requirement of license for employees that mix/prepare the drugs.

Thus, preparing a Database Management System for a pharmacy not only requires study of how things are handled from a customer or employee point of view but also the relevant laws. With this project, our aim was to develop a comprehensive system that could deal with challenges faced in day to day operation of a modern pharmacy. We studied the relevant laws and prepared a system that complies with the required Federal and State laws

Since having all the attributes in one single entity is infeasible and extremely expensive, we have 8 different entities which are interlinked with each other through various relations defined as shown in the ER diagram given below. The entities that we have chosen are PATIENT, MEDICINE, DOCTOR, BILL, PHARMACY, HOSPITAL, SUPPLIER AND EMPLOYEE.

Each of these tables contains multiple attributes which gives us information about the same. All the relations used are elaborated as: PATIENT 'consults' DOCTOR, PHARMACY 'sells' MEDICINE 'to' PATIENT, DOCTOR is 'associated with' HOSPITAL, PHARMACY 'links with' HOSPITAL, PHARMACY 'generates' BILL, PHARMACY 'gives order to' SUPPLIER, PHARMACY 'has' EMPLOYEE.

ER Diagram: (incremental stages)

1.

Diagram

Description automatically generated

At first we had considered only 5 entities with its respective attributes and the relationships between them. The entities considered were Pharmacy, Employee, Patient, BILL, and Medicine.

2.A picture containing text, whiteboard

Description automatically generated

Afterwards we added ‘Supplier’ entity since the medicines are manufactured and sold to the pharmacy by Supplier companies. The attributes of the entity are listed above. A many to many relation is drawn between the Supplier entity and Pharmacy entity as both can have contracts with many of each other.

3.A picture containing text, whiteboard

Description automatically generated

Here we finalised by adding the ‘Doctor’ entity which is associated with ‘Hospital’ entity with one to many relation constraint as Doctor belongs to only one hospital and hospital contains many doctors. Their respective attributes are mentioned above. Also Bill entity adds a attribute Doc\_ID.

A relationship which links Hospital entity and Pharmacy entity with many to many constraints is also drawn.

ER Diagram using ERD Plus tool:

Diagram

Description automatically generated

**TOOL USED**: ERD plus

###### ERDPlus is a web-based database modeling tool that lets you quickly and easily create. Entity Relationship Diagrams (ERDs) Relational Schemas (Relational Diagrams) Star Schemas (Dimensional Models).

###### standard ERD components.

* Entities
* Attributes
* Relationships

The notation supports drawing regular and weak entities, various types of attributes (regular, unique, multi-valued, derived, composite, and optional), and all possible cardinality constraints of relationships (mandatory-many, optional-many, mandatory-one and optional-one).

Changes from regular convention in the tool:

 for many relation

for one relation



for complete participation



 for partial participation