Northeastern University

DAMG06210- Data Management & Database Design

Project Title: A database design for **Healthcare data management and medicine distribution.**

Problem Statement:

A healthcare company in the United States seeks to keep track of and separate patient data based on their insurance companies and respective pharmacies. They seek to establish an automated drug distribution system to provide finest service to their customers. **Patients, healthcare providers, medicine orders, and pharmacies** are the four key entities that make up this management system.

Objective:

In the Healthcare data management system, Patient's data will be classified according to their individual Healthcare providers and pharmacies. In addition, the medicine distribution system will extract the patients' medicine orders and will update the directories of various pharmacies for medicine delivery.

The structure of system goes as follows:

- Patients will receive services from the Healthcare Providers (Hospitals, Clinics, Consultants etc).
- Orders will be generated based on prescriptions given by HCP's.
- Patients will be grouped based on their insurance providers and geographic location.
- Orders data will be separated into categories based on the pharmacies that will be distributing the medications.
- A periodic structure will be provided for the medicines being prescribed to different patients

Team Members:

Name	E-mail	NUID
Somnath Solaskar	solaskar.s@northeastern.edu	002105558
Mayank Yadav	yadav.may@northeastern.edu	002193976
Harsh Sharma	sharma.harsh@northeastern.edu	002102615
Viraj Panchal	panchal.v@northeastern.edu	001568792

Outcome of Design:

The proposed database design gives pharmacies an automated system to deliver drugs across several locations of the patients while also managing healthcare data. It also manages patient-insurance-related tasks and stores sensitive patient information.

Process Flow for Design:

1. **Healthcare Provide –> Patient**

- A healthcare provider HCP (hospital, doctor, consultant, lab) creates Patient records with patient's demographic information in their system whenever patient visits for any kind of health service.
- Patient demographic information details will be stored in **PATIENT** table.
- Patient Contact details will be added into the system in **CONTACTS** table for future communication and order tracking purpose.

2. **Patient –> Cases**

- Following that, for each visit, a case will be created for the patient. The **CASE** table will hold the visit information.

3. **Case –> Prescription**

- The doctor consults the patient and add the prescription to the patient account in the system. One prescription can have multiple drugs or service details.
- The details of the prescription and medicines will be recorded in the **PRESCRIPTION** table.

4. **Prescription –> Medicines**

- The **MEDICINES** table holds the information about various medicines and drugs available in the market.

5. **Medicines –> Insurance Tasks**

- Insurance coverage tasks for the prescribed medicines or requested health services will be handled by a health insurance client associated with the Patient. The data from this activity will be tracked in the **INSURANCE** table.

6. **Insurance –> Orders**

- Once the insurance is approved, an order for the drugs prescribed will be generated in the system under that specific case. The **ORDERS** table will record order details, order status, and tracking information.

7. **Orders –> Pharmacy/Distributor**

- One or more pharmacies/distributors will be linked to the HCP and Insurance Client, and vice versa. The **PHARMACY** table will be used to hold pharmacy information.
- All insured orders will be separated into assigned pharmacies, and the prescription and patient address information will be transferred to the assigned pharmacy for medicine distribution.

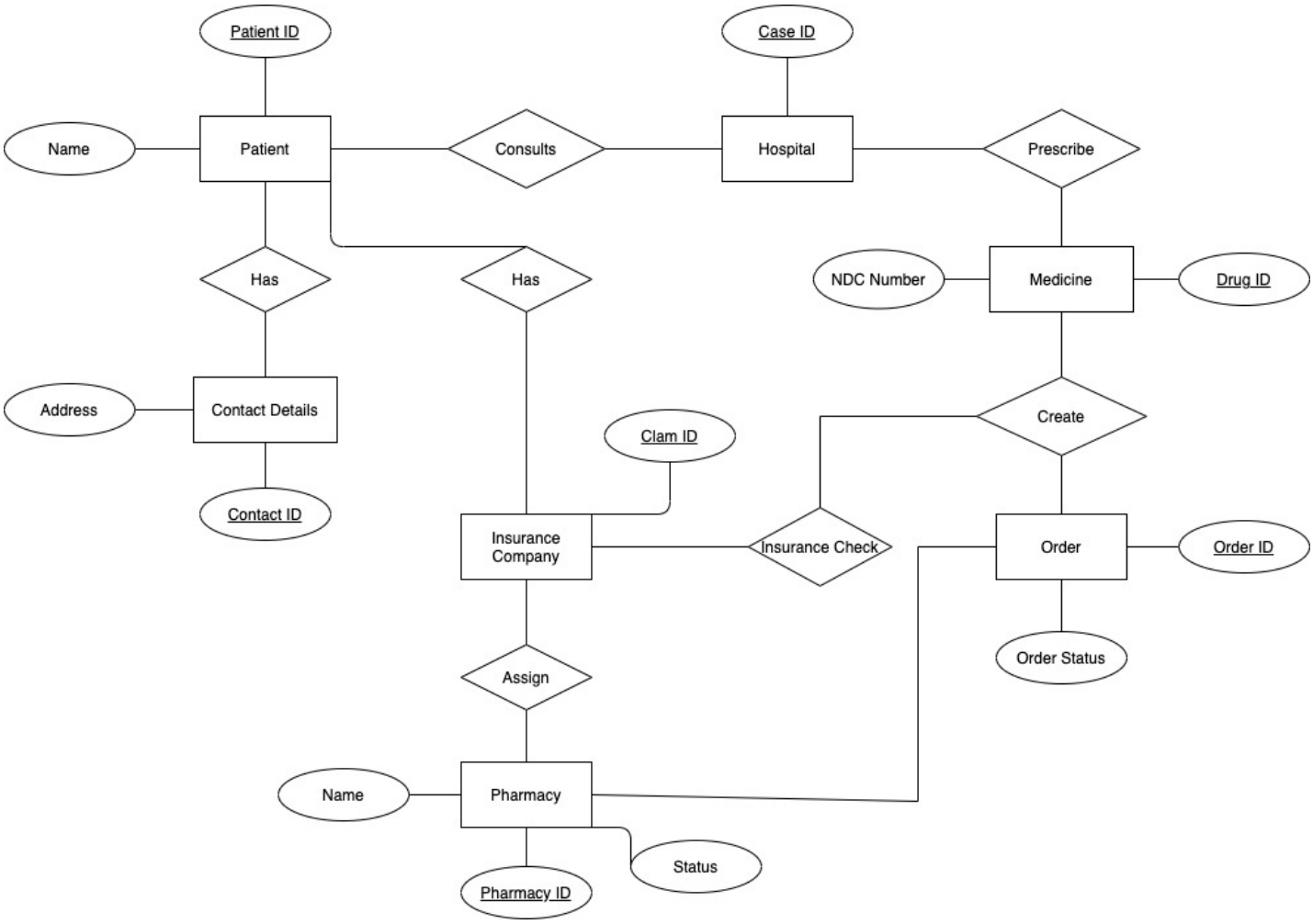
8. **Pharmacy -> HCP**

- Later, HCP will receive a shipment update from the pharmacies, and the order status will be updated in the database system if it has been **sent or delivered**.

Database Components:

Entity Name	**Attributes**	**Description**
Patient	Patient_id	Unique identifier for each patient
Case	Case_id	A unique id for each visit to HCP
Medicines	Medicine_id	Represents unique id for each type of drug available
Contacts	Contact_id	Uniquely represents patient address and contact information
Insurance	Claim_id	Unique identifier for each insurance claim request
Prescription	Prescription_id	Unique id representing the prescription document
Pharmacy	Pharmacy_id	Uniquely Represents a Pharmacy

Conceptual Diagram:



Relational Design Draft and Attribute Details: