

# DISTRIBUTED AND PARALLEL DATABASE SYSTEMS

## PROJECT-1

### HETERO PHARMACEUTICALS DATABASE

**Hetero Pharmaceuticals** is a service-oriented company for medicinal drugs. Hetero provides pharma services across metro cities in INDIA. The Headquarters is located at Hyderabad. Each pharmacy has details of patients, prescriptions, doctors, day-to-day transactions, Inventory of Medicines, Insurance details. Additionally, its database holds information about the nearby clinics, which serve as entities in the whole database and have their respective attributes.

There are several entities used in this project and those are listed below,

#### Entity:

Hetero has enormous database as its spread across several locations in India. These entities comprise of strong and weak entities which are as listed below,

**Strong entities:** Strong entities do not depend on any other entity for their existence. They are as follows:

1. **Employees data:** Employees are individuals working across several stores and they include cashiers, store managers etc... Each employee would have unique EMP\_ID when compared to other employees. This entity shares Many-One relationship with Pharmacy Locations. Employees data is considered as strong entity as this an independent to pharmacy.
2. **Pharmacy Location:** Each pharmacy has a Unique ID since there are several stores across India.
3. **Clinics:** For Every nearby Pharmacy, there exists a clinic where patients consult doctor, and he prescribes medicines. Each clinic might have basic laboratory depending on the disease.
4. **Medicines:** This entity stores the information of all the medicines present in the pharmacy. This Entity also stores information of what medicines are given to patients and the medicines which are required for stock in the pharmacy. Each medicine has a unique ID.
5. **Billing:** This Entity describes about the transactions made by patient at pharmacy during purchase. Each medicine has a price depending on the drug and dosage and so this entity stores the cost price of the medicines and stores the information of day-to-day payments related to buying and selling the medicines.
6. **Patients:** Patients is the main entity for a pharmacy, because patients give complete analysis of most of the entity in this E-R. This also have two weak entities depended on it. This gives the information about patient name, disease, age, contact and relates to doctor entity.
7. **Prescription:** Prescription is one that varies with person to person and disease to disease & the doctor recommends to the patient. So, this entity stores the information of doctors, patients, medicines, recommended dosage and the quantity of inhale to be used.

8. **Inventory:** Inventory is the stock present in each pharmacy. Inventory stores the data of the quantity of medicines and related information with respect to medicines, vaccines etc.

**Weak Entities:** Unlike strong entities, weak entities depend on strong entities for their existence. They are listed as follows:

1. **Insurance:** This is a weak entity as it is dependent on the patients, only a key from cannot make it unique as it relates to patients.
2. **Doctors:** Doctors here are not independent as the prescription takes the major role, so doctors entity depends on prescription and patients.

**Attributes:**

1. **EMPLOYEES:**

- EMP\_ID
- EMP\_NAME
- DESIGNATION
- CONTACT\_NAME
- ADDRESS
- PAYROLL

2. **MEDICINES:**

- MED\_CODE
- DOSAGE
- MED\_NAME
- QUANTITY
- COMPANY\_NAME
- PRICE

3. **BILLING:**

- TRANSACTION \_ ID
- BILL \_AMOUNT
- DATE\_OF\_BILLING
- EMP\_NAME

4. **PHARMACY LOCATION:**

- ADDRESS
- CONTACT\_NUMBER
- EMAIL

5. **PRESCRIPTION:**

- DOCTOR

- PATIENT
- MEDICINES
- DATE

**6. INVENTORY:**

- ITEM\_NAME
- ITEM\_ID
- QUANTITY

**7. INSURANCE:**

- INSURANCE\_COMPANY
- PATIENT\_ID
- AMOUNT

**8. CLINIC:**

- CLINIC\_CODE
- DOCTOR\_NAME
- PATIENT\_ID
- MEDICINE
- ADDRESS
- CONTACT\_NO

**9. DOCTOR:**

- DOCTOR\_NAME
- DOCTOR\_ID
- SPECIALIZATION
- CONTACT

**10. PATIENTS:**

- PATIENT NAME
- PATIENT\_ID
- DISEASE
- AGE
- CONTACT

**Relationships:**

- Each entity is either way related to another entity depending on the relationship between those entities.

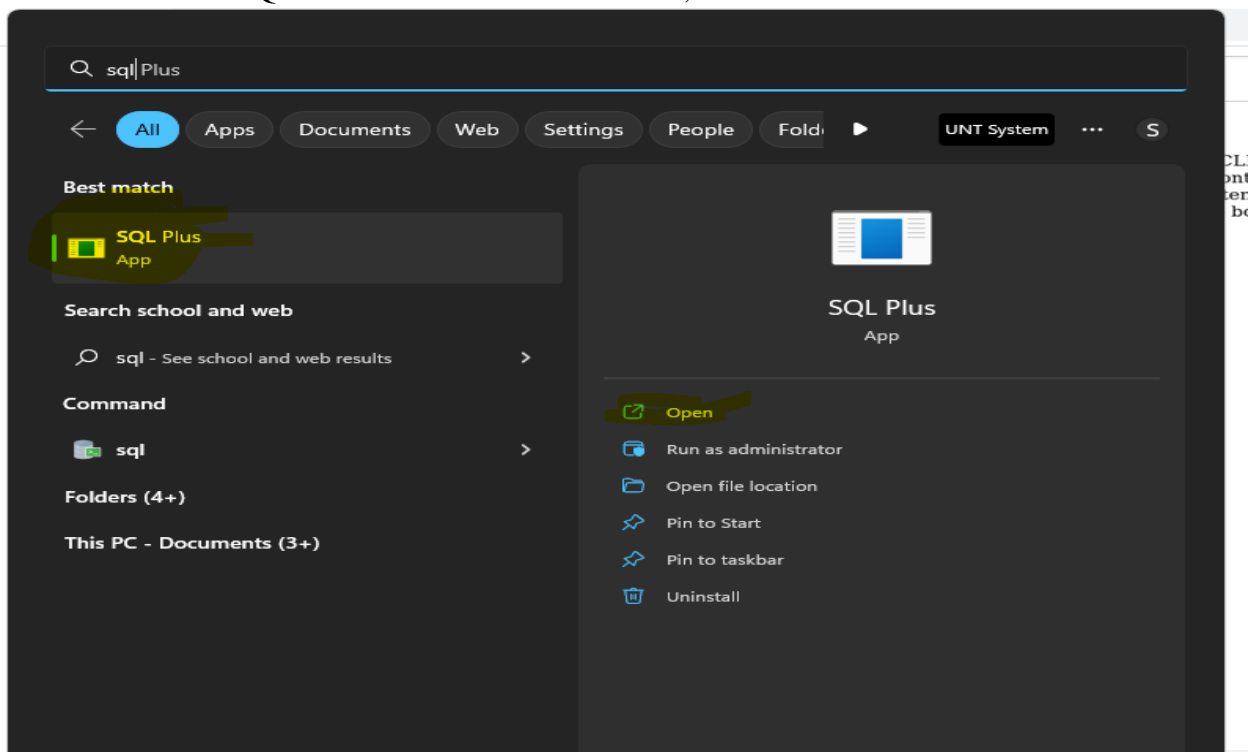
- This entity relation as 2 many to many relations, they are doctors to prescription and doctor to patients.
- There are six 1 to many relations, hetero pharmacy to inventory, hetero pharmacy to medicine, hetero pharmacy to prescription, pharmacy to employee data, medicine to inventory and, patients to insurance.
- Two 1 to 1 relations, they are prescriptions to patients and hetero pharmacy to billing.

#### Constraints:

- We are using various constraints, they are primary key, foreign key, check and unique in this database.
- Primary keys are Employee id, Medicine code, Drug id etc.
- Foreign keys are Patient id, doctor name etc.
- Check constraint is used to check the inventory stock.

#### Oracle Installation:

- Oracle 21c Enterprise Edition for Windows setup has been installed successfully into the computer from the Oracle Website. A video has been recorded regarding the installation of Oracle 21c setup and it's been uploaded as another MEDIA file.  
The screenshot of SQL Plus installed is shown below;



- The link to download the setup is as follows below,  
<https://www.oracle.com/database/technologies/xe-downloads.html>

### Contribution towards the Project:

- My Contribution towards this project is that I look-up with the data of Clinics and Patients. I administer the data of Clinics and Patients. I have my part of research and analysis of Clinics data, Patients Data. Every clinic will be located nearby to each pharmacy. Every clinic will be having a Doctor for consultation of patients. So, Doctor prescribes the medicines to patients.
- For table Clinic, I came up with the attributes as Clinic\_Code which is unique and is primary key, Doctor\_name & Doctor\_ID, Patients\_ID, as foreign key, Address, Contact\_No., of the Clinic. This table will be in relationship with tables- Doctor, Patients, Pharmacy Locations.
- For Table Patients, I came up with the attributes as Patients\_ID which is primary key, Patients\_Name, Patient\_Address, Patient\_Contact\_No. Disease. In each prescription, a doctor and medicines details of that the patient use will be present, Hence the Doctor\_ID and Medicines\_Code will be the foreign keys.