DBMS - Mini Project
Phamaceutical Database

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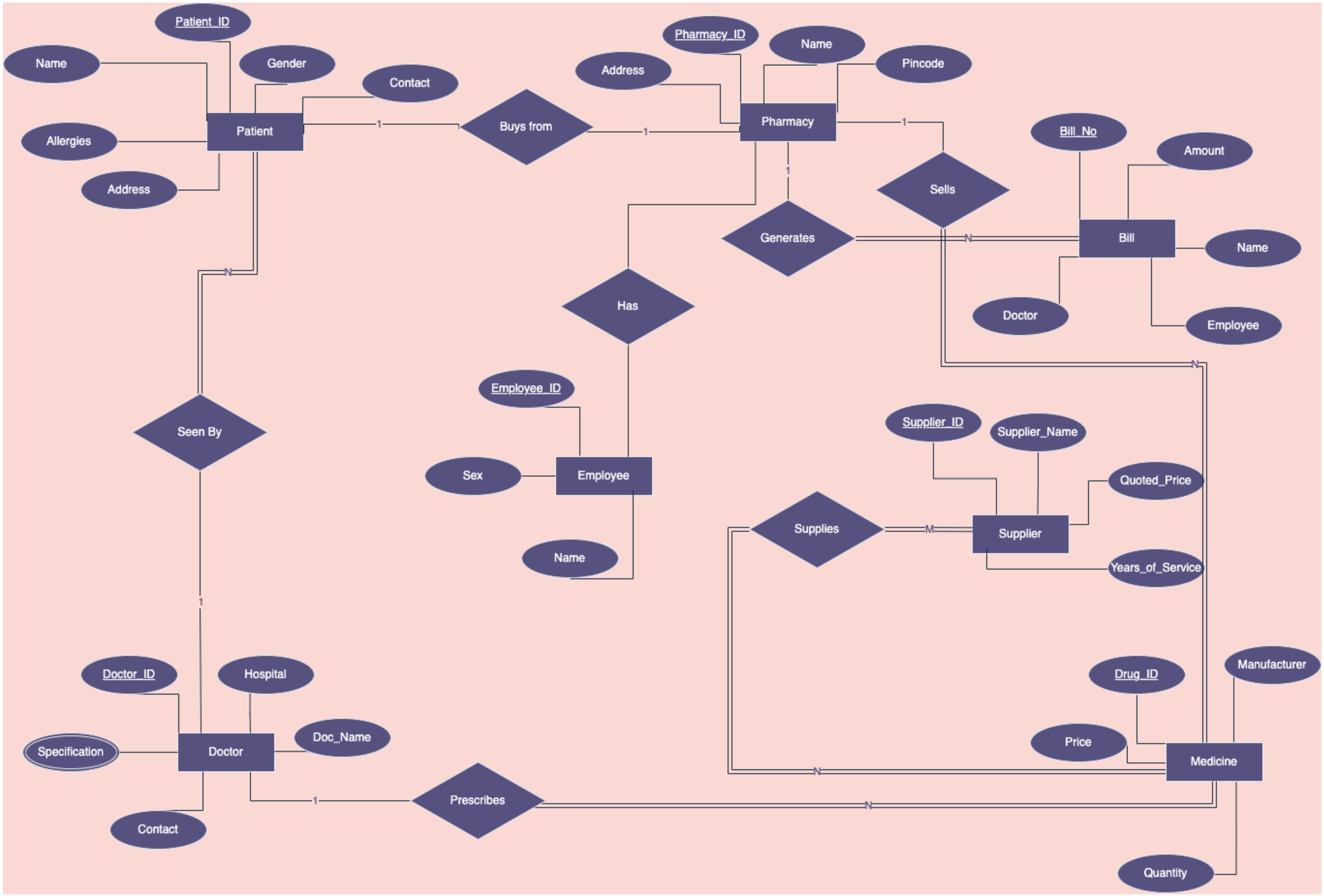
V Semester Section D

Short Description and Scope of the Project

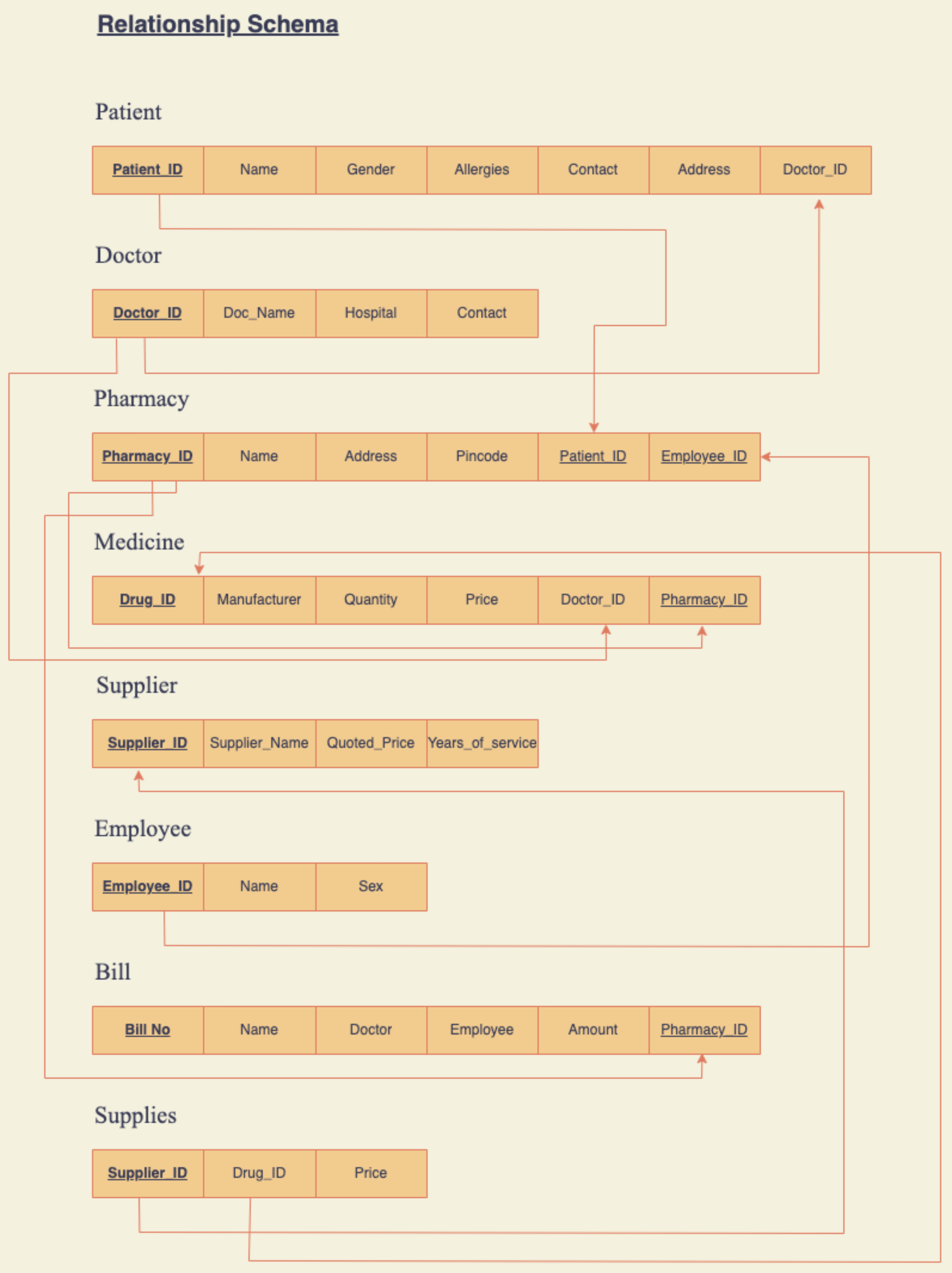
The Pharmaceutical management system will help Pharmacists across the country to manage, organise and keep track of medicine available in inventory and in the market. This will help Pharmacists to never be low on stock of medicine, as unavailability of medicine can put people suffering from long-term and short-term illnesses at risk. This system will also help in maintaining and tallying the expenditure as well as, keeping track of user information about required medicine of repeated customers

With this project, my aim was to develop a comprehensive system that could deal with challenges faced in day to day operation of a modern pharmacy.

ER Diagram


Patient_ID
Name
Gender
Contact
Allergies
Patient
Address
Buys from
1
1
Pharmacy_ID
Name
Address
Pincode
Pharmacy
1
1
Sells
Bill_No
Amount
Generates
N
Bill
Name
N
Doctor
Employee
Has
N
Seen By
Employee_ID
Sex
Employee
Name
Supplier_ID
Supplier_Name
Quoted_Price
Supplies
M
Supplier
Years_of_Service
1
Doctor_ID
Hospital
Doc_Name
Specification
Doctor
Contact
Prescribes
1
N
Drug_ID
Manufacturer
Price
Medicine
N
Quantity

Relational Schema



Relationship Schema

Patient

Patient_ID	Name	Gender	Allergies	Contact	Address	Doctor_ID

Doctor

Doctor_ID	Doc_Name	Hospital	Contact

Pharmacy

Pharmacy_ID	Name	Address	Pincode	Patient_ID	Employee_ID

Medicine

Drug_ID	Manufacturer	Quantity	Price	Doctor_ID	Pharmacy_ID

Supplier

Supplier_ID	Supplier_Name	Quoted_Price	Years_of_service

Employee

Employee_ID	Name	Sex

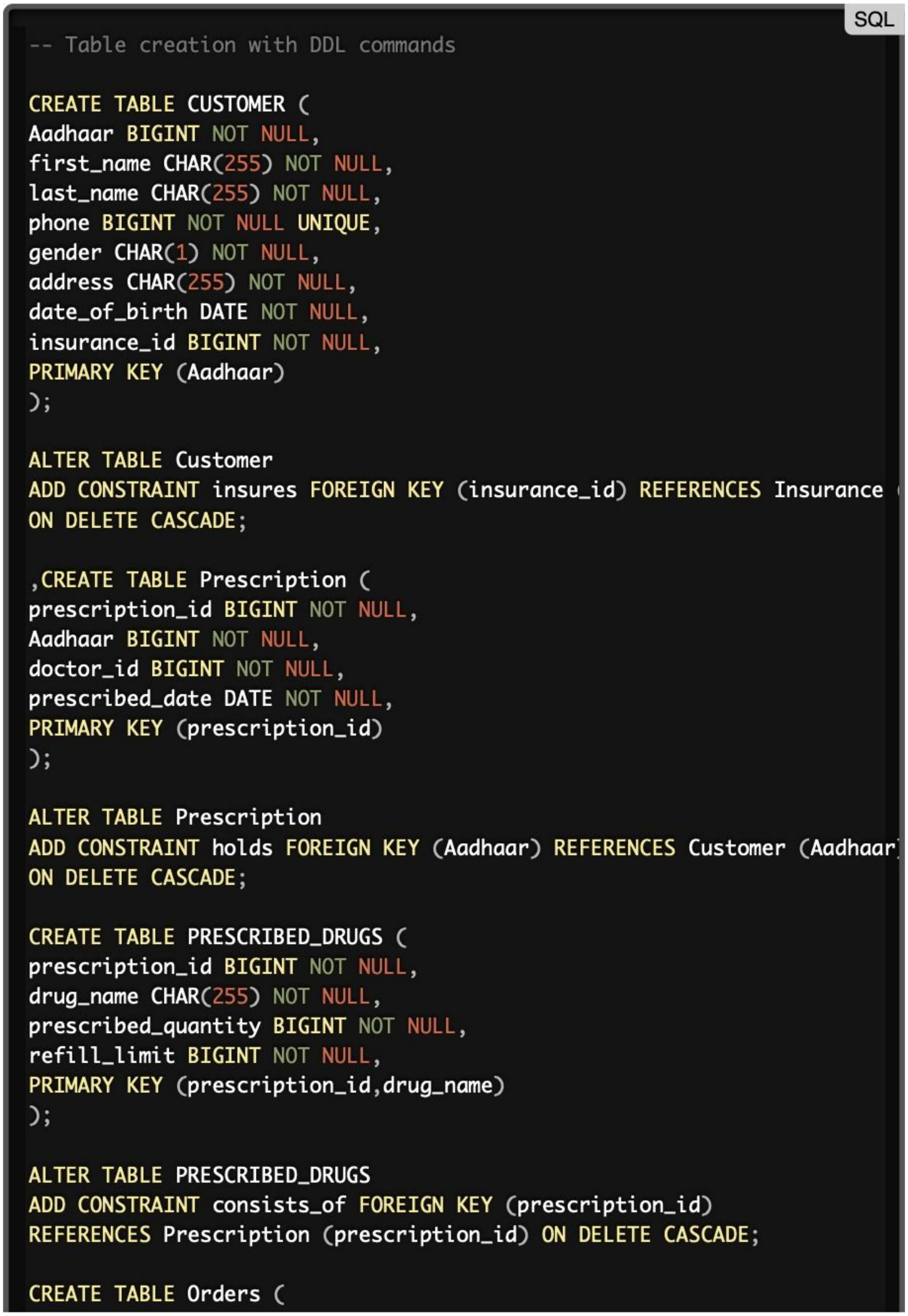
Bill

Bill No	Name	Doctor	Employee	Amount	Pharmacy_ID

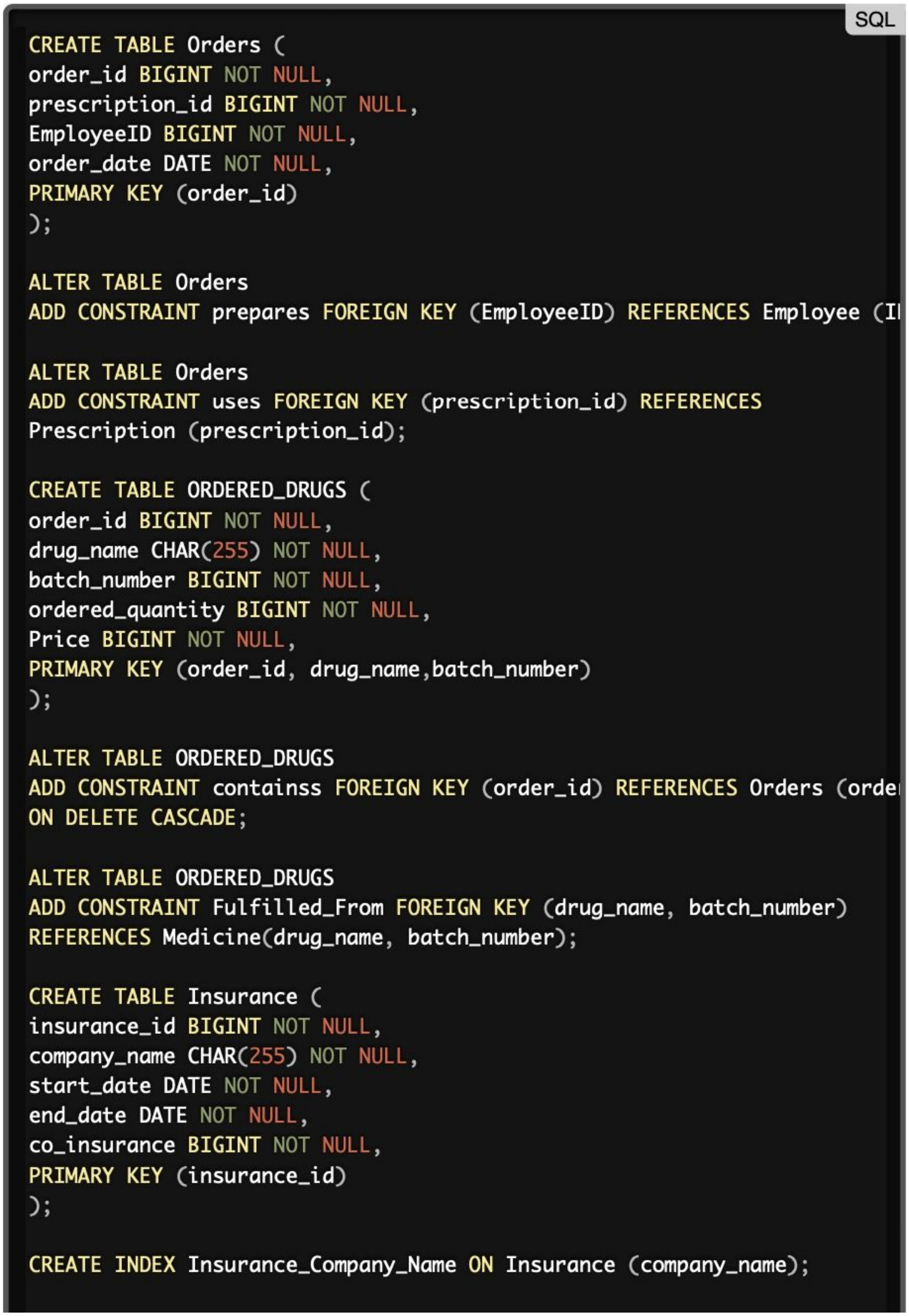
Supplies

Supplier_ID	Drug_ID	Price

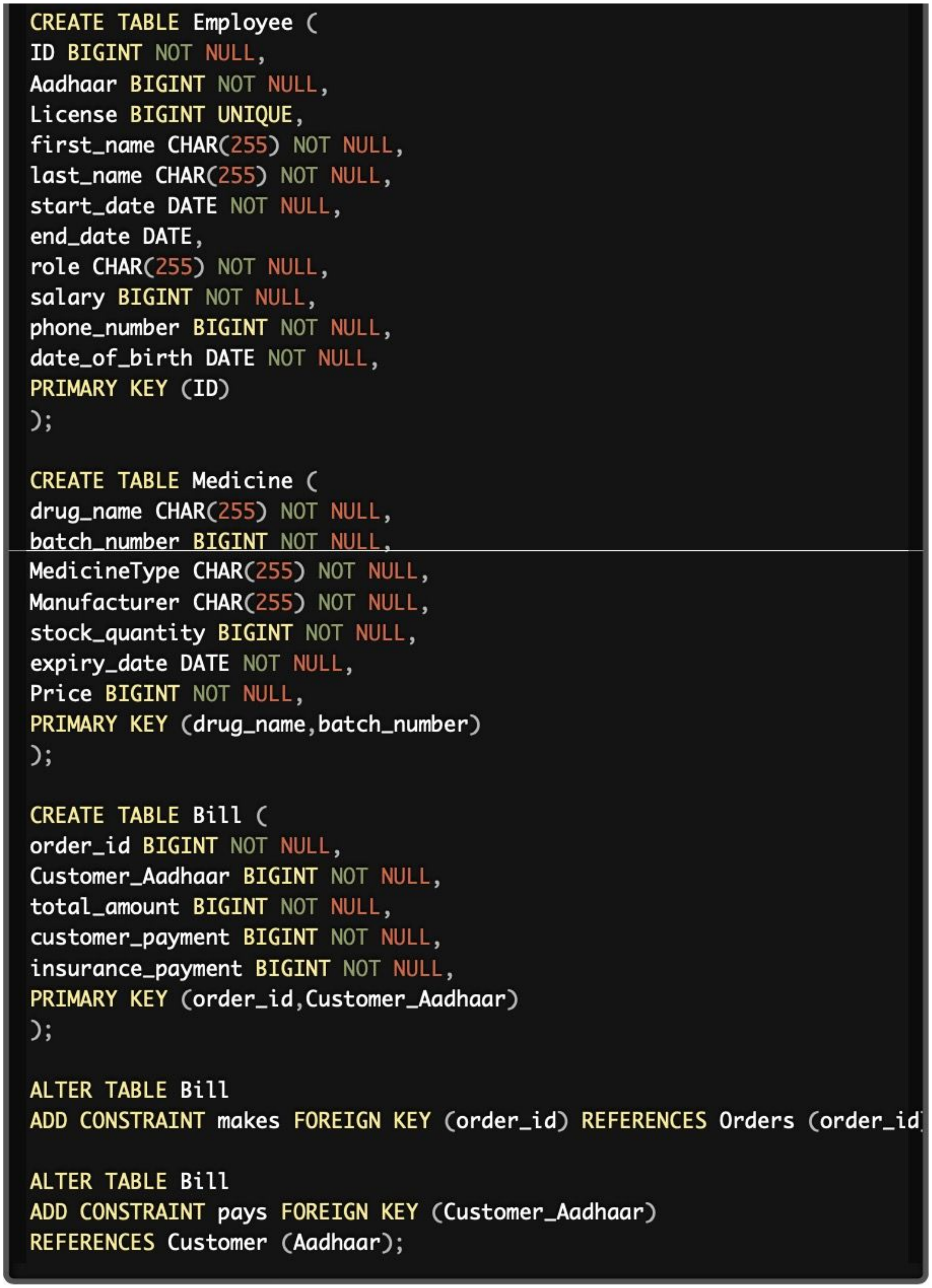
DDL statements - Building the database



```sql
-- Table creation with DDL commands

CREATE TABLE CUSTOMER (
Aadhaar BIGINT NOT NULL,
first_name CHAR(255) NOT NULL,
last_name CHAR(255) NOT NULL,
phone BIGINT NOT NULL UNIQUE,
gender CHAR(1) NOT NULL,
address CHAR(255) NOT NULL,
date_of_birth DATE NOT NULL,
insurance_id BIGINT NOT NULL,
PRIMARY KEY (Aadhaar)
);

ALTER TABLE Customer
ADD CONSTRAINT insures FOREIGN KEY (insurance_id) REFERENCES Insurance (
ON DELETE CASCADE;

,CREATE TABLE Prescription (
prescription_id BIGINT NOT NULL,
Aadhaar BIGINT NOT NULL,
doctor_id BIGINT NOT NULL,
prescribed_date DATE NOT NULL,
PRIMARY KEY (prescription_id)
);

ALTER TABLE Prescription
ADD CONSTRAINT holds FOREIGN KEY (Aadhaar) REFERENCES Customer (Aadhaar)
ON DELETE CASCADE;

CREATE TABLE PRESCRIBED_DRUGS (
prescription_id BIGINT NOT NULL,
drug_name CHAR(255) NOT NULL,
prescribed_quantity BIGINT NOT NULL,
refill_limit BIGINT NOT NULL,
PRIMARY KEY (prescription_id,drug_name)
);

ALTER TABLE PRESCRIBED_DRUGS
ADD CONSTRAINT consists_of FOREIGN KEY (prescription_id)
REFERENCES Prescription (prescription_id) ON DELETE CASCADE;

CREATE TABLE Orders (
```

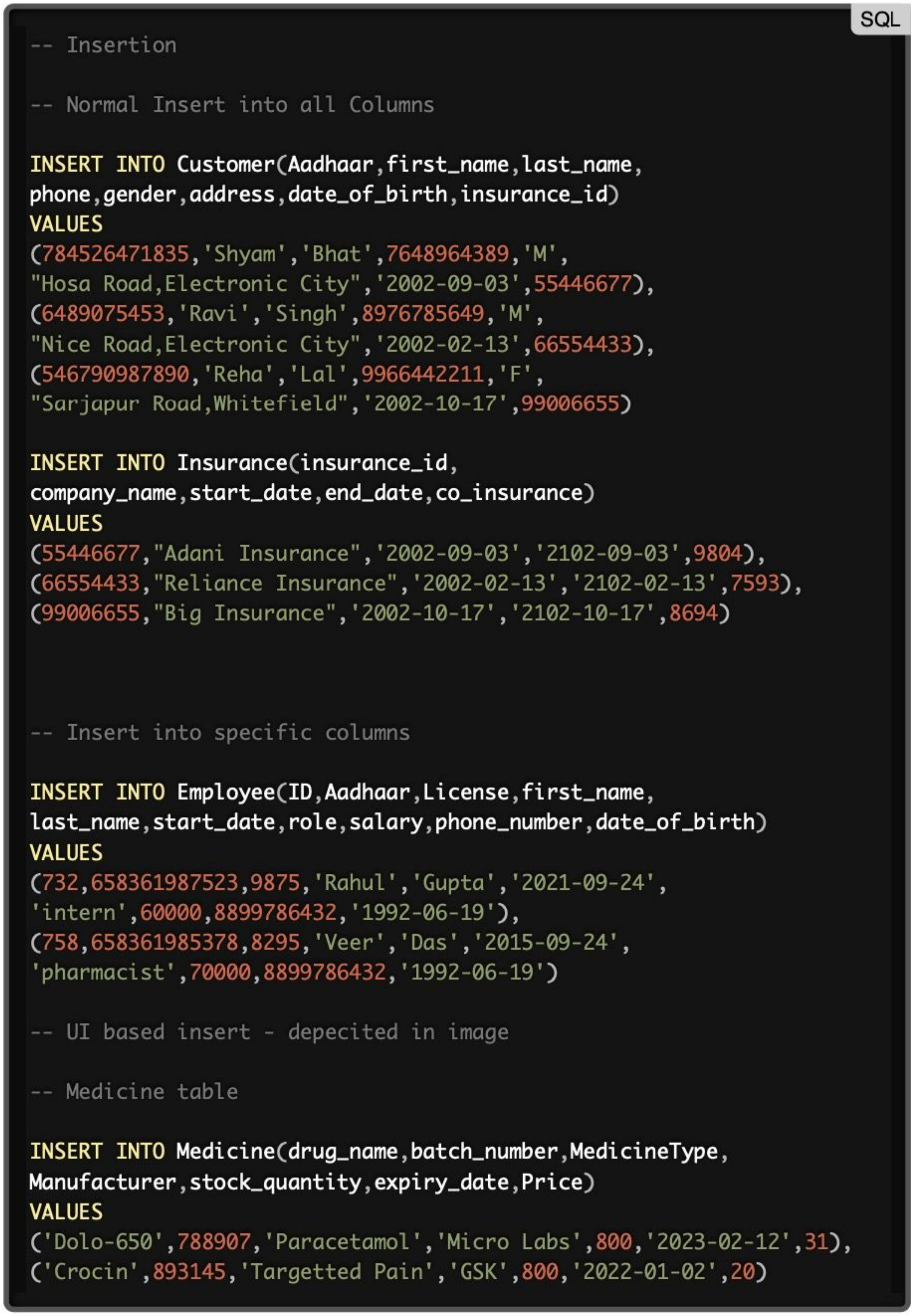


```sql
CREATE TABLE Orders (
order_id BIGINT NOT NULL,
prescription_id BIGINT NOT NULL,
EmployeeID BIGINT NOT NULL,
order_date DATE NOT NULL,
PRIMARY KEY (order_id)
);

ALTER TABLE Orders
ADD CONSTRAINT prepares FOREIGN KEY (EmployeeID) REFERENCES Employee (I

ALTER TABLE Orders
ADD CONSTRAINT uses FOREIGN KEY (prescription_id) REFERENCES
Prescription (prescription_id);

CREATE TABLE ORDERED_DRUGS (
order_id BIGINT NOT NULL,
drug_name CHAR(255) NOT NULL,
batch_number BIGINT NOT NULL,
ordered_quantity BIGINT NOT NULL,
Price BIGINT NOT NULL,
PRIMARY KEY (order_id, drug_name,batch_number)
);

ALTER TABLE ORDERED_DRUGS
ADD CONSTRAINT containss FOREIGN KEY (order_id) REFERENCES Orders (orde
ON DELETE CASCADE;

ALTER TABLE ORDERED_DRUGS
ADD CONSTRAINT Fulfilled_From FOREIGN KEY (drug_name, batch_number)
REFERENCES Medicine(drug_name, batch_number);

CREATE TABLE Insurance (
insurance_id BIGINT NOT NULL,
company_name CHAR(255) NOT NULL,
start_date DATE NOT NULL,
end_date DATE NOT NULL,
co_insurance BIGINT NOT NULL,
PRIMARY KEY (insurance_id)
);

CREATE INDEX Insurance_Company_Name ON Insurance (company_name);
```



```sql
CREATE TABLE Employee (
ID BIGINT NOT NULL,
Aadhaar BIGINT NOT NULL,
License BIGINT UNIQUE,
first_name CHAR(255) NOT NULL,
last_name CHAR(255) NOT NULL,
start_date DATE NOT NULL,
end_date DATE,
role CHAR(255) NOT NULL,
salary BIGINT NOT NULL,
phone_number BIGINT NOT NULL,
date_of_birth DATE NOT NULL,
PRIMARY KEY (ID)
);

CREATE TABLE Medicine (
drug_name CHAR(255) NOT NULL,
batch_number BIGINT NOT NULL,
MedicineType CHAR(255) NOT NULL,
Manufacturer CHAR(255) NOT NULL,
stock_quantity BIGINT NOT NULL,
expiry_date DATE NOT NULL,
Price BIGINT NOT NULL,
PRIMARY KEY (drug_name,batch_number)
);

CREATE TABLE Bill (
order_id BIGINT NOT NULL,
Customer_Aadhaar BIGINT NOT NULL,
total_amount BIGINT NOT NULL,
customer_payment BIGINT NOT NULL,
insurance_payment BIGINT NOT NULL,
PRIMARY KEY (order_id,Customer_Aadhaar)
);

ALTER TABLE Bill
ADD CONSTRAINT makes FOREIGN KEY (order_id) REFERENCES Orders (order_id

ALTER TABLE Bill
ADD CONSTRAINT pays FOREIGN KEY (Customer_Aadhaar)
REFERENCES Customer (Aadhaar);
```

Populating the Database

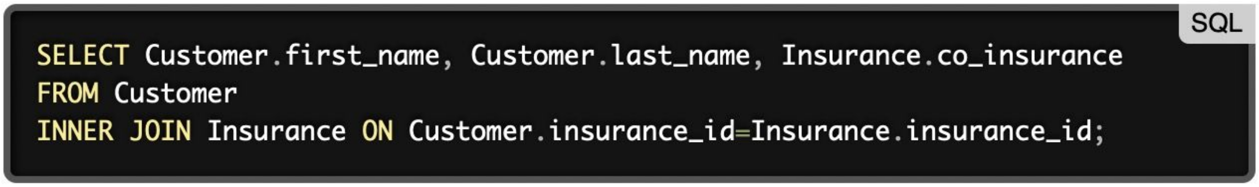


```sql
-- Insertion

-- Normal Insert into all Columns

INSERT INTO Customer(Aadhaar,first_name,last_name,
phone,gender,address,date_of_birth,insurance_id)
VALUES
(784526471835,'Shyam','Bhat',7648964389,'M',
"Hosa Road,Electronic City",'2002-09-03',55446677),
(6489075453,'Ravi','Singh',8976785649,'M',
"Nice Road,Electronic City",'2002-02-13',66554433),
(546790987890,'Reha','Lal',9966442211,'F',
"Sarjapur Road,Whitefield",'2002-10-17',99006655)

INSERT INTO Insurance(insurance_id,
company_name,start_date,end_date,co_insurance)
VALUES
(55446677,"Adani Insurance",'2002-09-03','2102-09-03',9804),
(66554433,"Reliance Insurance",'2002-02-13','2102-02-13',7593),
(99006655,"Big Insurance",'2002-10-17','2102-10-17',8694)



-- Insert into specific columns

INSERT INTO Employee(ID,Aadhaar,License,first_name,
last_name,start_date,role,salary,phone_number,date_of_birth)
VALUES
(732,658361987523,9875,'Rahul','Gupta','2021-09-24',
'intern',60000,8899786432,'1992-06-19'),
(758,658361985378,8295,'Veer','Das','2015-09-24',
'pharmacist',70000,8899786432,'1992-06-19')

-- UI based insert - depecited in image

-- Medicine table

INSERT INTO Medicine(drug_name,batch_number,MedicineType,
Manufacturer,stock_quantity,expiry_date,Price)
VALUES
('Dolo-650',788907,'Paracetamol','Micro Labs',800,'2023-02-12',31),
('Crocin',893145,'Targetted Pain','GSK',800,'2022-01-02',20)
```

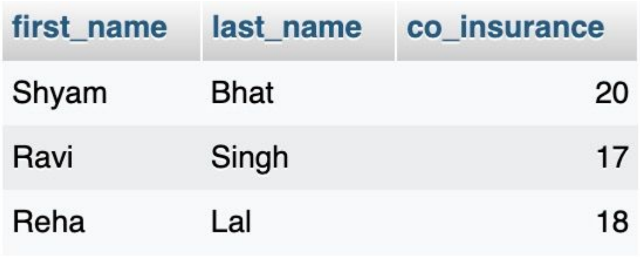
Join Queries

Showcase at least 4 join queries
Write the query in English Language, Show the equivalent SQL statement and also a screenshot of the query and the results

1.Display all the Customer names with their coinsurance rates

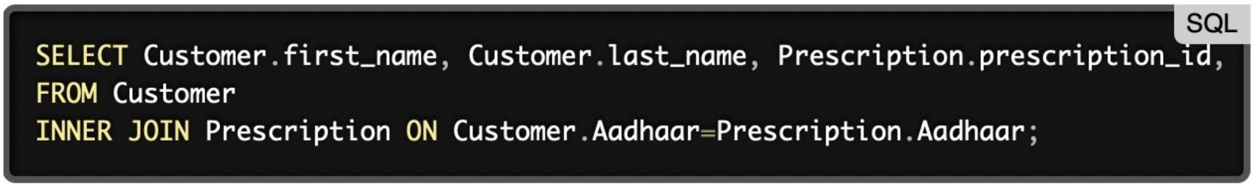


```sql
SELECT Customer.first_name, Customer.last_name, Insurance.co_insurance
FROM Customer
INNER JOIN Insurance ON Customer.insurance_id=Insurance.insurance_id;
```

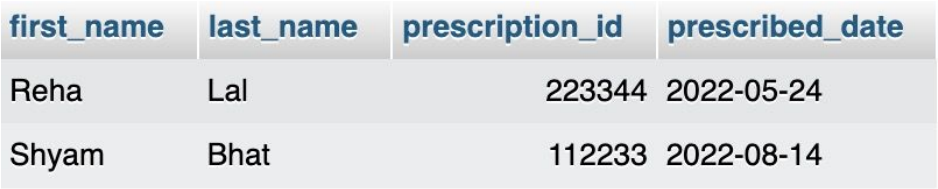


first_name	last_name	co_insurance
Shyam	Bhat	20
Ravi	Singh	17
Reha	Lal	18

2.Display prescription id and prescription date for all the customers

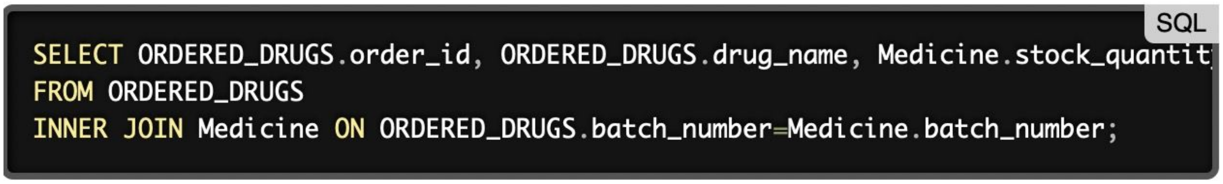


```sql
SELECT Customer.first_name, Customer.last_name, Prescription.prescription_id,
FROM Customer
INNER JOIN Prescription ON Customer.Aadhaar=Prescription.Aadhaar;
```

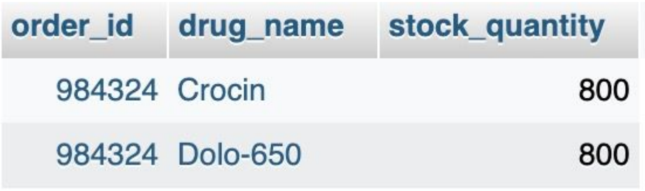


first_name	last_name	prescription_id	prescribed_date
Reha	Lal	223344	2022-05-24
Shyam	Bhat	112233	2022-08-14

3.Check the stock left for medicines being ordered

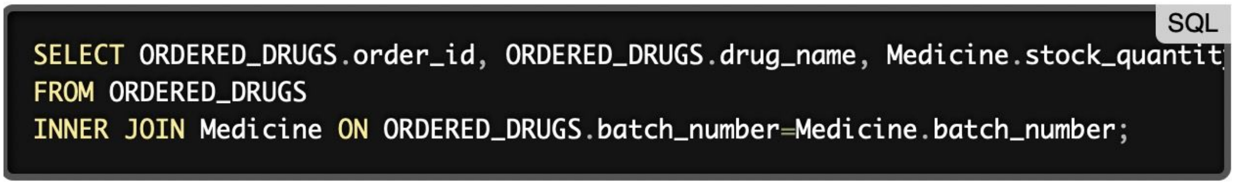


```sql
SELECT ORDERED_DRUGS.order_id, ORDERED_DRUGS.drug_name, Medicine.stock_quantit
FROM ORDERED_DRUGS
INNER JOIN Medicine ON ORDERED_DRUGS.batch_number=Medicine.batch_number;
```

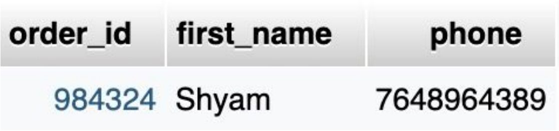


order_id	drug_name	stock_quantity
984324	Crocin	800
984324	Dolo-650	800

4. Show the Customer Name and Phone number with Bill amount to be paid



```sql
SELECT ORDERED_DRUGS.order_id, ORDERED_DRUGS.drug_name, Medicine.stock_quantit
FROM ORDERED_DRUGS
INNER JOIN Medicine ON ORDERED_DRUGS.batch_number=Medicine.batch_number;
```

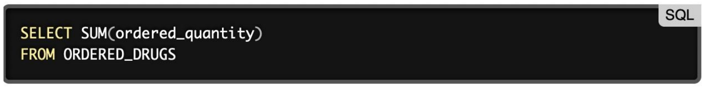


order_id	first_name	phone
984324	Shyam	7648964389

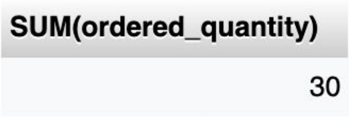
Aggregate Functions

Showcase at least 4 Aggregate function queries
Write the query in English Language, Show the equivalent SQL statement and also a screenshot of the query and the results

1. Show sum of ordered drugs

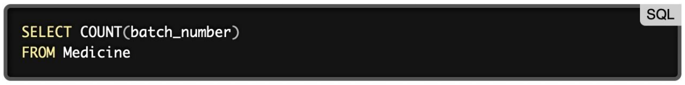


```
SELECT SUM(ordered_quantity)
FROM ORDERED_DRUGS
```

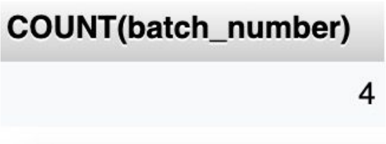


SUM(ordered_quantity)
30

2. Show number of drugs in database

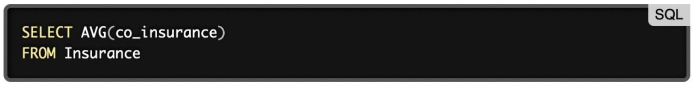


```
SELECT COUNT(batch_number)
FROM Medicine
```

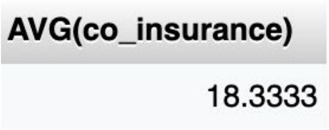


COUNT(batch_number)
4

3. Show the average co-insurance rates

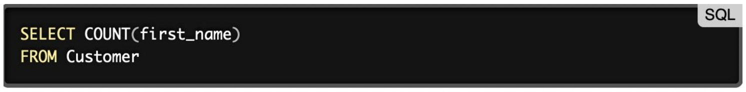


```
SELECT AVG(co_insurance)
FROM Insurance
```

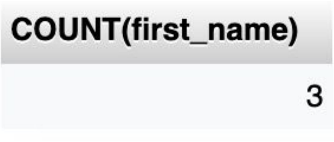


AVG(co_insurance)
18.3333

4. Show how many customers buy from the Pharmacy



```
SELECT COUNT(first_name)
FROM Customer
```



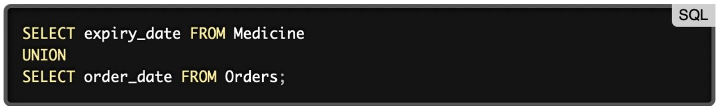
COUNT(first_name)
3

Set Operations

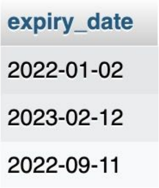
Showcase at least 4 Set Operations queries

Write the query in English Language, Show the equivalent SQL statement and also a screenshot of the query and the results

1.Show by what date does the Pharmacy have to clear all it's stocks

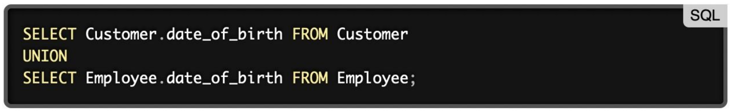


```sql
SELECT expiry_date FROM Medicine
UNION
SELECT order_date FROM Orders;
```

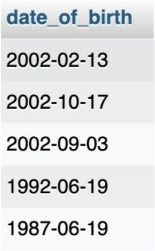


expiry_date
2022-01-02
2023-02-12
2022-09-11

2.Show date of births of all the customers and employees

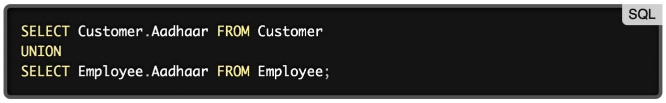


```sql
SELECT Customer.date_of_birth FROM Customer
UNION
SELECT Employee.date_of_birth FROM Employee;
```

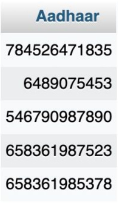


date_of_birth
2002-02-13
2002-10-17
2002-09-03
1992-06-19
1987-06-19

3.Show aadhaar numbers of all the customers and employees



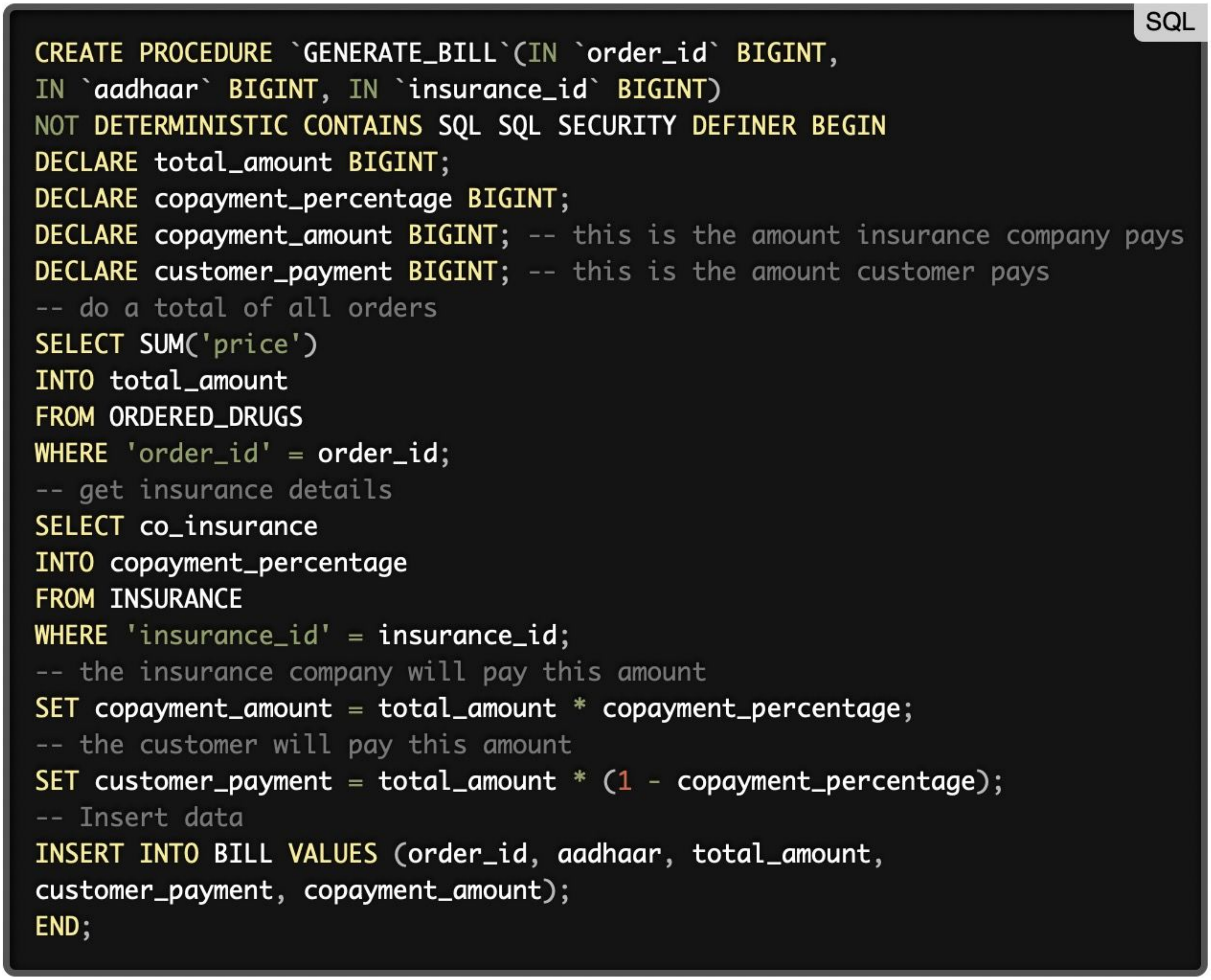
```sql
SELECT Customer.Aadhaar FROM Customer
UNION
SELECT Employee.Aadhaar FROM Employee;
```



Aadhaar
784526471835
6489075453
546790987890
658361987523
658361985378

Functions and Procedures

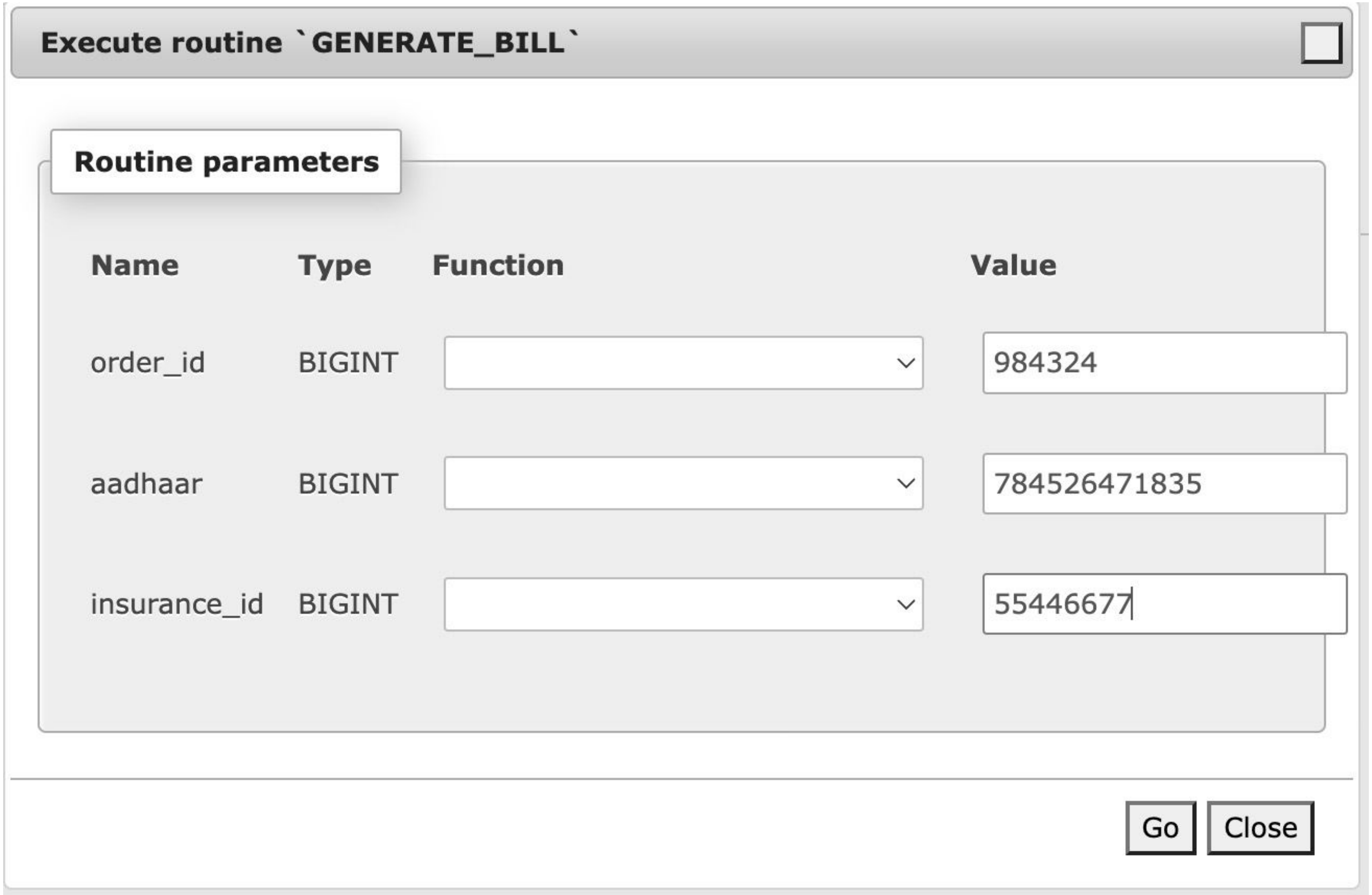
Create a Function and Procedure. State the objective of the function / Procedure. Run and display the results.



```sql
CREATE PROCEDURE `GENERATE_BILL`(IN `order_id` BIGINT,
IN `aadhaar` BIGINT, IN `insurance_id` BIGINT)
NOT DETERMINISTIC CONTAINS SQL SQL SECURITY DEFINER BEGIN
DECLARE total_amount BIGINT;
DECLARE copayment_percentage BIGINT;
DECLARE copayment_amount BIGINT; -- this is the amount insurance company pays
DECLARE customer_payment BIGINT; -- this is the amount customer pays
-- do a total of all orders
SELECT SUM('price')
INTO total_amount
FROM ORDERED_DRUGS
WHERE 'order_id' = order_id;
-- get insurance details
SELECT co_insurance
INTO copayment_percentage
FROM INSURANCE
WHERE 'insurance_id' = insurance_id;
-- the insurance company will pay this amount
SET copayment_amount = total_amount * copayment_percentage;
-- the customer will pay this amount
SET customer_payment = total_amount * (1 - copayment_percentage);
-- Insert data
INSERT INTO BILL VALUES (order_id, aadhaar, total_amount,
customer_payment, copayment_amount);
END;
```

Objective: Generates a bill for the user and saves this bill into the BILL table

Parameters

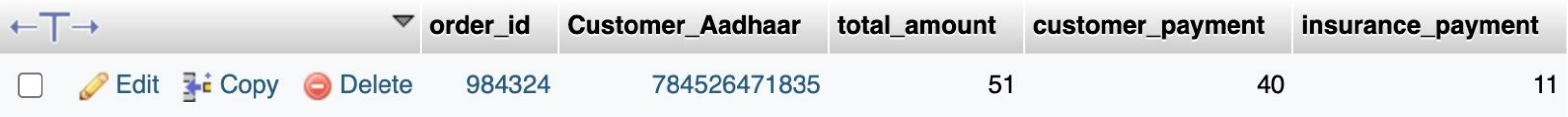


Execute routine `GENERATE_BILL`

Routine parameters

Name	Type	Function	Value
order_id	BIGINT		984324
aadhaar	BIGINT		784526471835
insurance_id	BIGINT		55446677

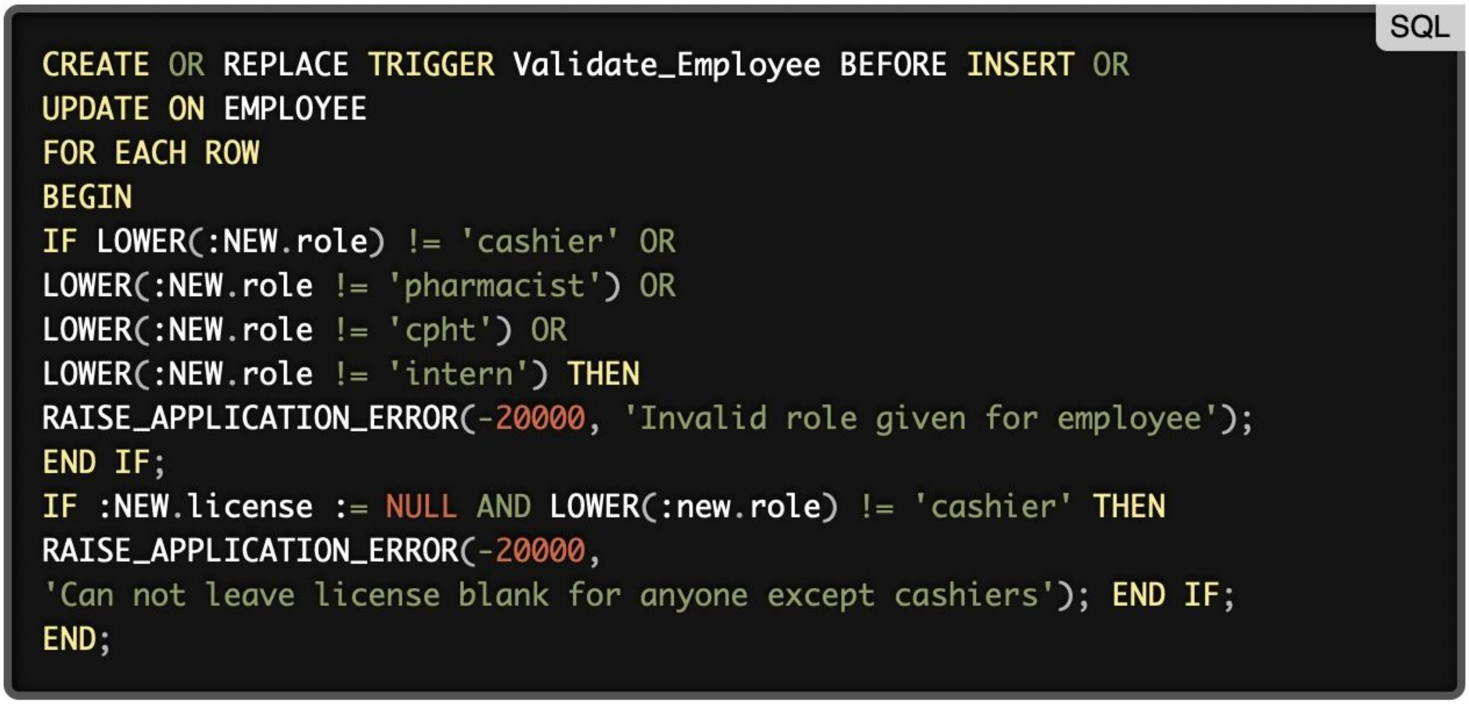
Output



	order_id	Customer_Aadhaar	total_amount	customer_payment	insurance_payment
□ Edit Copy Delete	984324	784526471835	51	40	11

Triggers and Cursors

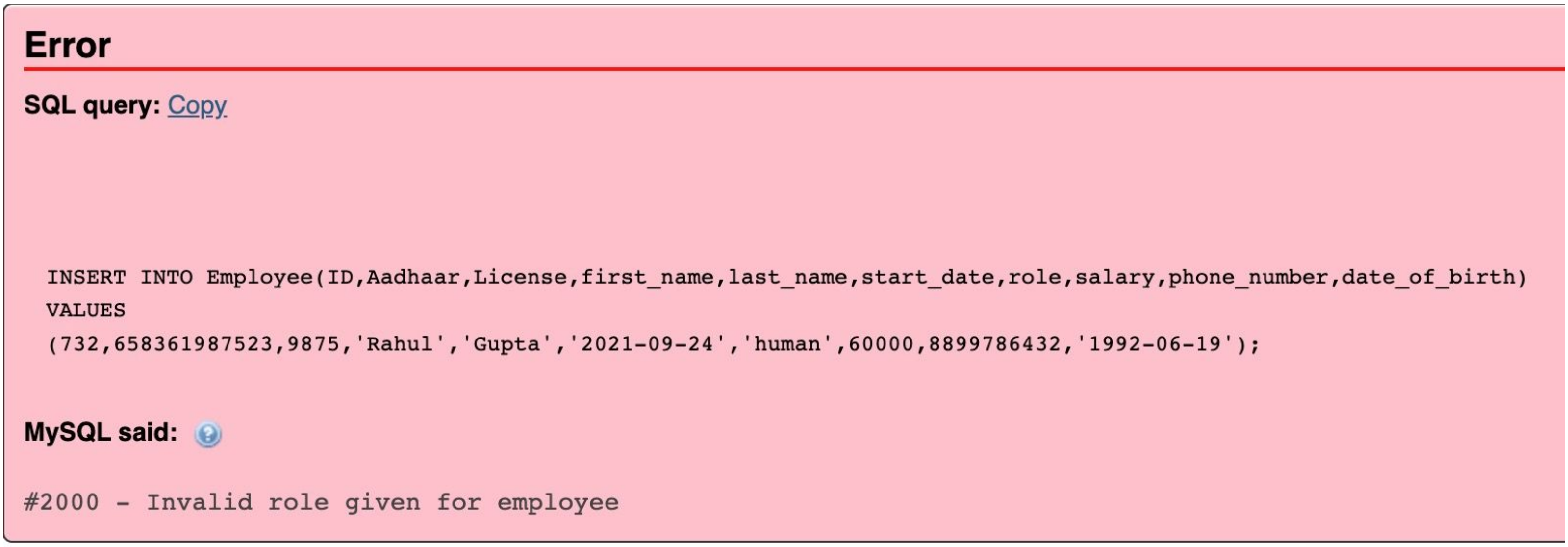
Create a Trigger and a Cursor. State the objective. Run and display the results.



```
CREATE OR REPLACE TRIGGER Validate_Employee BEFORE INSERT OR
UPDATE ON EMPLOYEE
FOR EACH ROW
BEGIN
IF LOWER(:NEW.role) != 'cashier' OR
LOWER(:NEW.role != 'pharmacist') OR
LOWER(:NEW.role != 'cpht') OR
LOWER(:NEW.role != 'intern') THEN
RAISE_APPLICATION_ERROR(-20000, 'Invalid role given for employee');
END IF;
IF :NEW.license := NULL AND LOWER(:new.role) != 'cashier' THEN
RAISE_APPLICATION_ERROR(-20000,
'Can not leave license blank for anyone except cashiers'); END IF;
END;
```

Objective: Checks if the employee role is valid or not

Possible values-> Pharmacist,CPhT,Intern,Cashier



Error

SQL query: Copy

```
INSERT INTO Employee(ID,Aadhaar,License,first_name,last_name,start_date,role,salary,phone_number,date_of_birth)
VALUES
(732,658361987523,9875,'Rahul','Gupta','2021-09-24','human',60000,8899786432,'1992-06-19');
```

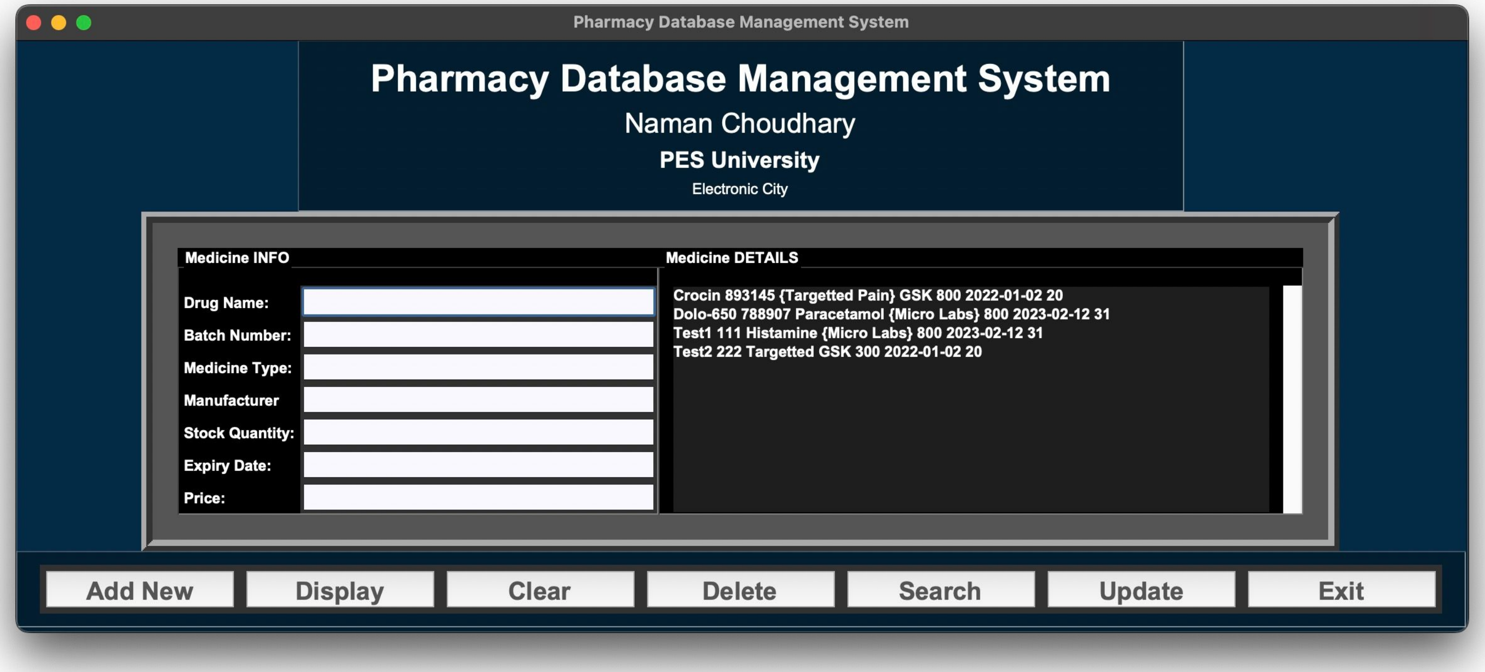
MySQL said:

```
#2000 - Invalid role given for employee
```

Developing a Frontend

The frontend should support

1. Addition, Modification and Deletion of records from any chosen table
2. There should be an window to accept and run any SQL statement and display the result



```
Crocin 893145 {Targetted Pain} GSK 800 2022-01-02 20
Dolo-650 788907 Paracetamol {Micro Labs} 800 2023-02-12 31
Test1 111 Histamine {Micro Labs} 800 2023-02-12 31
Test2 222 Targetted GSK 300 2022-01-02 20
```