**Lab 9**

**1. Perform the following tasks:**

**a. Create Student table with following attributes (STUDENT\_ID , FIRST\_NAME, LAST\_NAME, PHONE\_NUMBER, MARKS, COURSE\_ID).**

CREATE TABLE Course (

COURSE\_ID INT PRIMARY KEY,

COURSE\_NAME VARCHAR(100)

);

CREATE TABLE Student (

STUDENT\_ID INT PRIMARY KEY,

FIRST\_NAME VARCHAR(50),

LAST\_NAME VARCHAR(50),

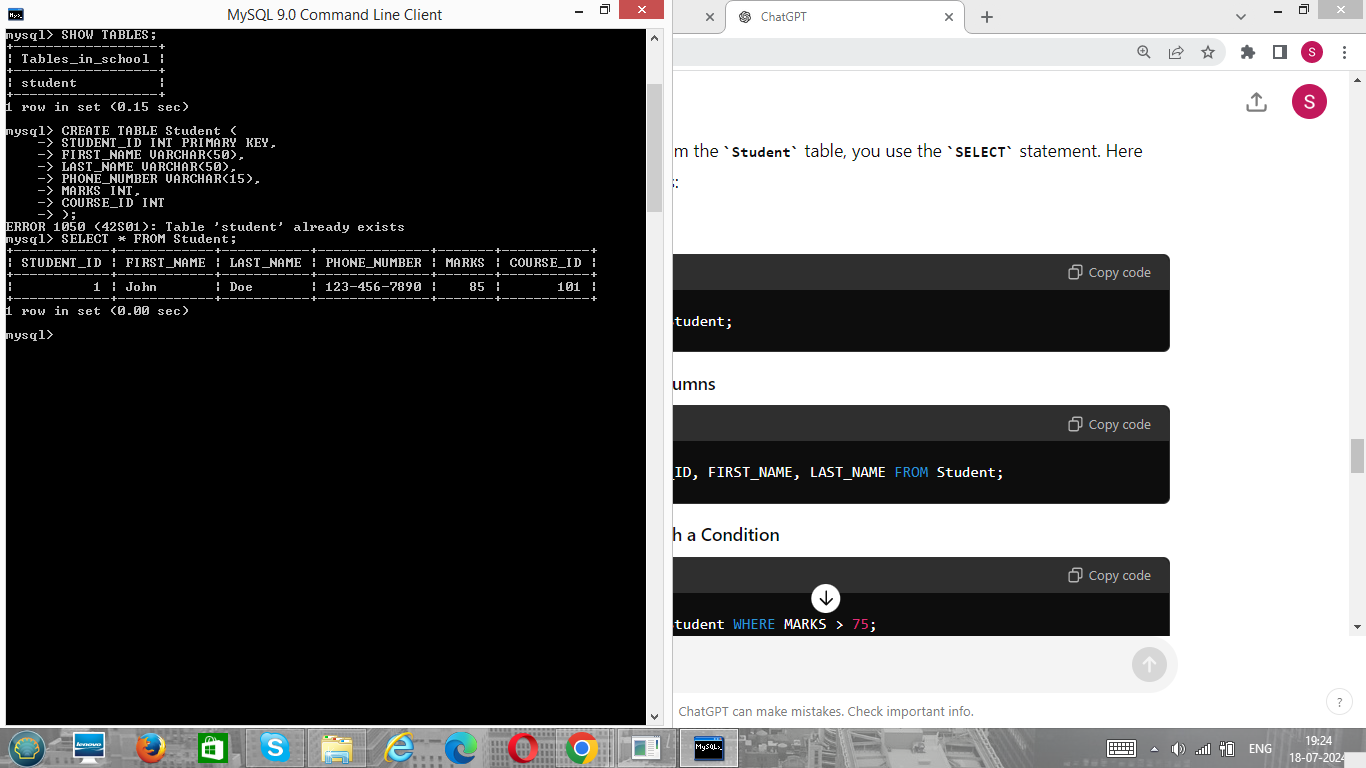
PHONE\_NUMBER VARCHAR(15),

MARKS DECIMAL(5, 2),

COURSE\_ID INT,

FOREIGN KEY (COURSE\_ID) REFERENCES Course(COURSE\_ID)

);



**b. Create Course table with following attributes (COURSE\_ID, COURSE\_NAME).**

-- Insert records into Course table

INSERT INTO Course (COURSE\_ID, COURSE\_NAME) VALUES (1, 'Mathematics');

INSERT INTO Course (COURSE\_ID, COURSE\_NAME) VALUES (2, 'Physics');

INSERT INTO Course (COURSE\_ID, COURSE\_NAME) VALUES (3, 'Chemistry');

INSERT INTO Course (COURSE\_ID, COURSE\_NAME) VALUES (4, 'Biology');

-- Insert records into Student table

INSERT INTO Student (STUDENT\_ID, FIRST\_NAME, LAST\_NAME, PHONE\_NUMBER, MARKS, COURSE\_ID) VALUES (1, 'John', 'Doe', '123-456-7890', 85.5, 1);

INSERT INTO Student (STUDENT\_ID, FIRST\_NAME, LAST\_NAME, PHONE\_NUMBER, MARKS, COURSE\_ID) VALUES (2, 'Jane', 'Smith', '234-567-8901', 90.0, 2);

INSERT INTO Student (STUDENT\_ID, FIRST\_NAME, LAST\_NAME, PHONE\_NUMBER, MARKS, COURSE\_ID) VALUES (3, 'Alice', 'Johnson', '345-678-9012', 78.0, 3);

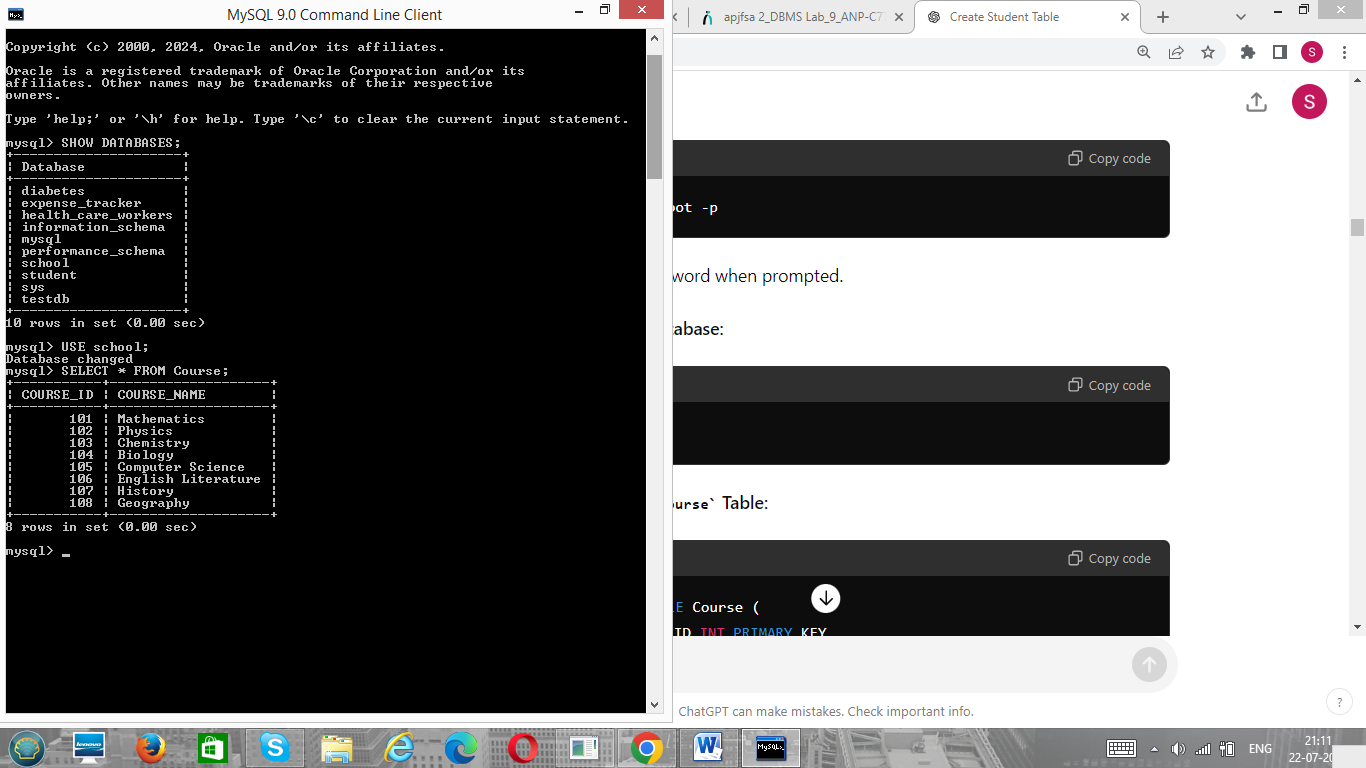
INSERT INTO Student (STUDENT\_ID, FIRST\_NAME, LAST\_NAME, PHONE\_NUMBER, MARKS, COURSE\_ID) VALUES (4, 'Bob', 'Brown', '456-789-0123', 92.5, 1);

INSERT INTO Student (STUDENT\_ID, FIRST\_NAME, LAST\_NAME, PHONE\_NUMBER, MARKS, COURSE\_ID) VALUES (5, 'Emily', 'Davis', '567-890-1234', 88.5, 2);

INSERT INTO Student (STUDENT\_ID, FIRST\_NAME, LAST\_NAME, PHONE\_NUMBER, MARKS, COURSE\_ID) VALUES (6, 'Michael', 'Wilson', '678-901-2345', 74.0, 3);

INSERT INTO Student (STUDENT\_ID, FIRST\_NAME, LAST\_NAME, PHONE\_NUMBER, MARKS, COURSE\_ID) VALUES (7, 'Sarah', 'Miller', '789-012-3456', 81.0, 4);

INSERT INTO Student (STUDENT\_ID, FIRST\_NAME, LAST\_NAME, PHONE\_NUMBER, MARKS, COURSE\_ID) VALUES (8, 'David', 'Moore', '890-123-4567', 79.5, 4);



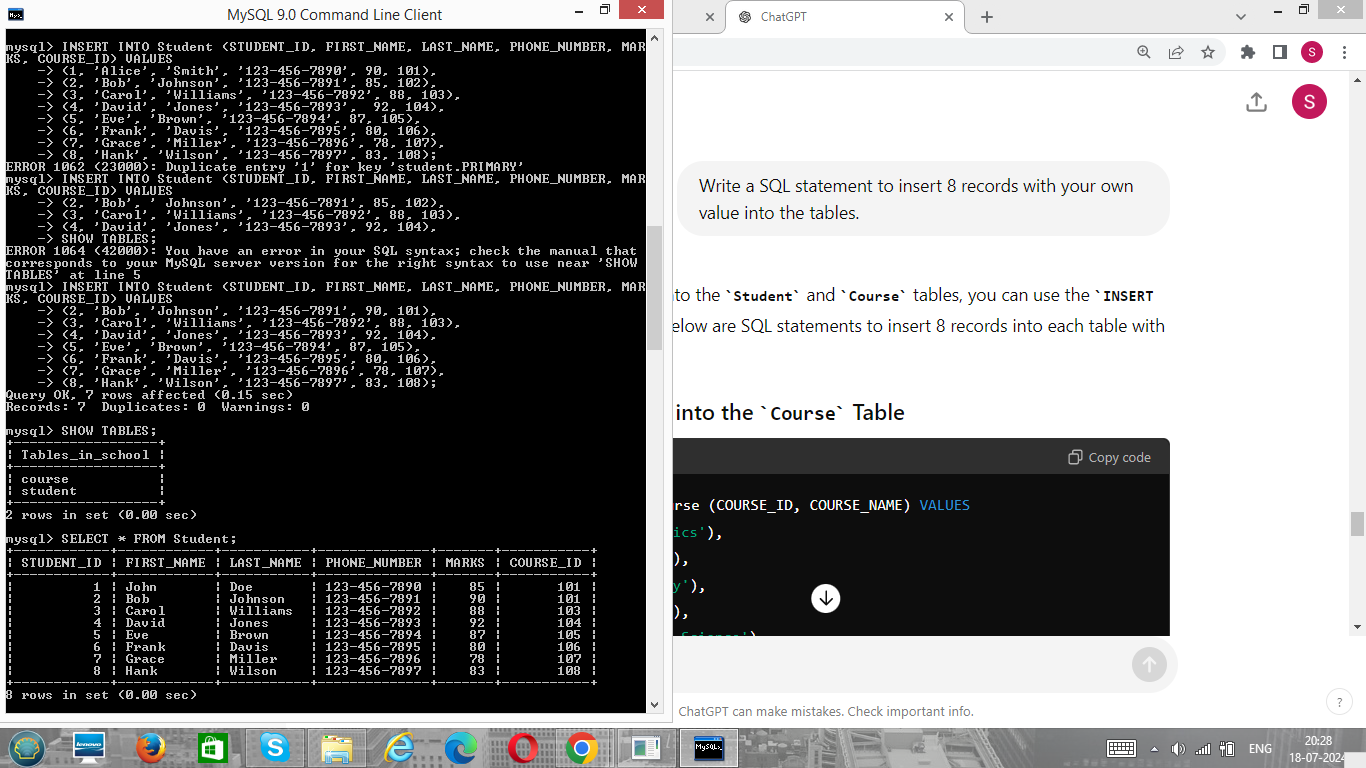
**c. Write a SQL statement to insert 8 records with your own value into the tables.**

SELECT COURSE\_NAME, COUNT(\*) AS NUM\_STUDENTS

FROM Student

JOIN Course ON Student.COURSE\_ID = Course.COURSE\_ID

GROUP BY COURSE\_NAME;

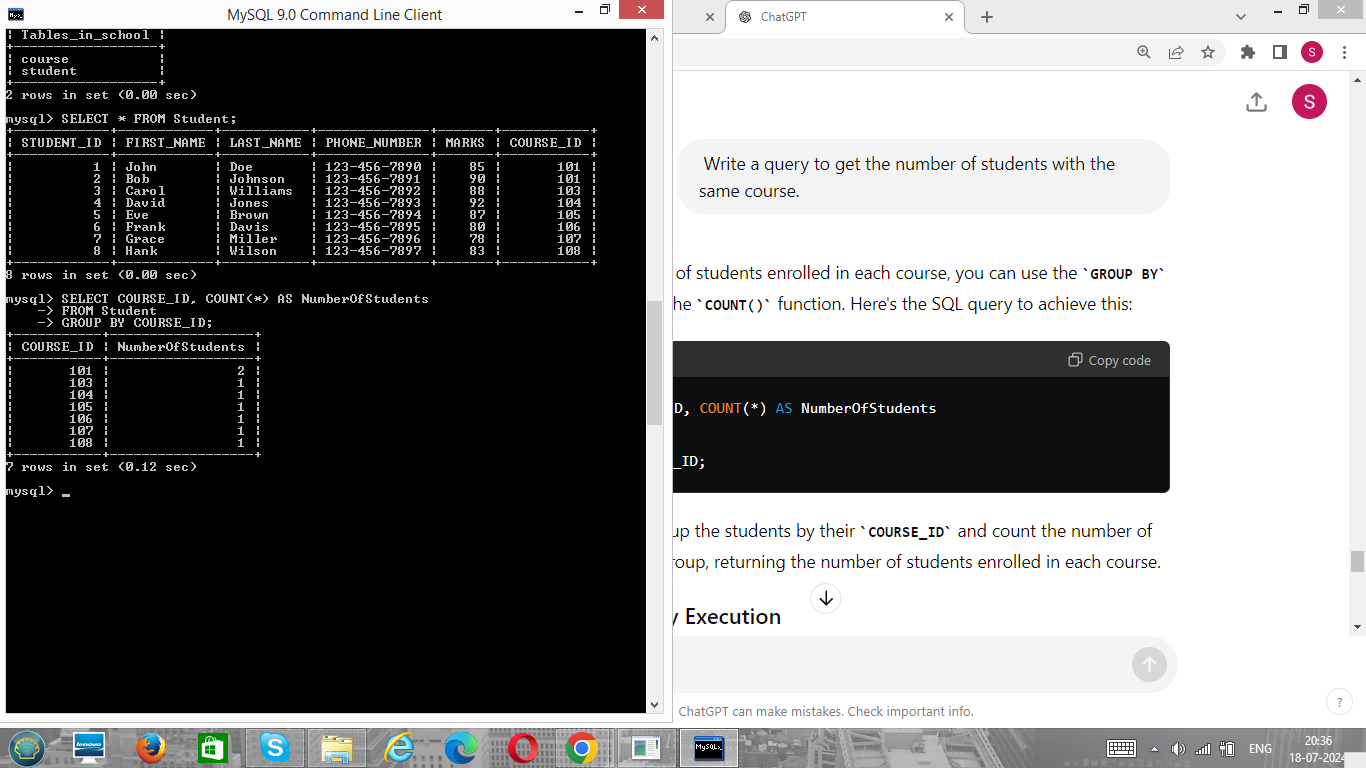


**d. Write a query to get the number of students with the same course.**

SELECT s.FIRST\_NAME, s.LAST\_NAME, c.COURSE\_NAME, s.MARKS

FROM Student s

JOIN Course c ON s.COURSE\_ID = c.COURSE\_ID;

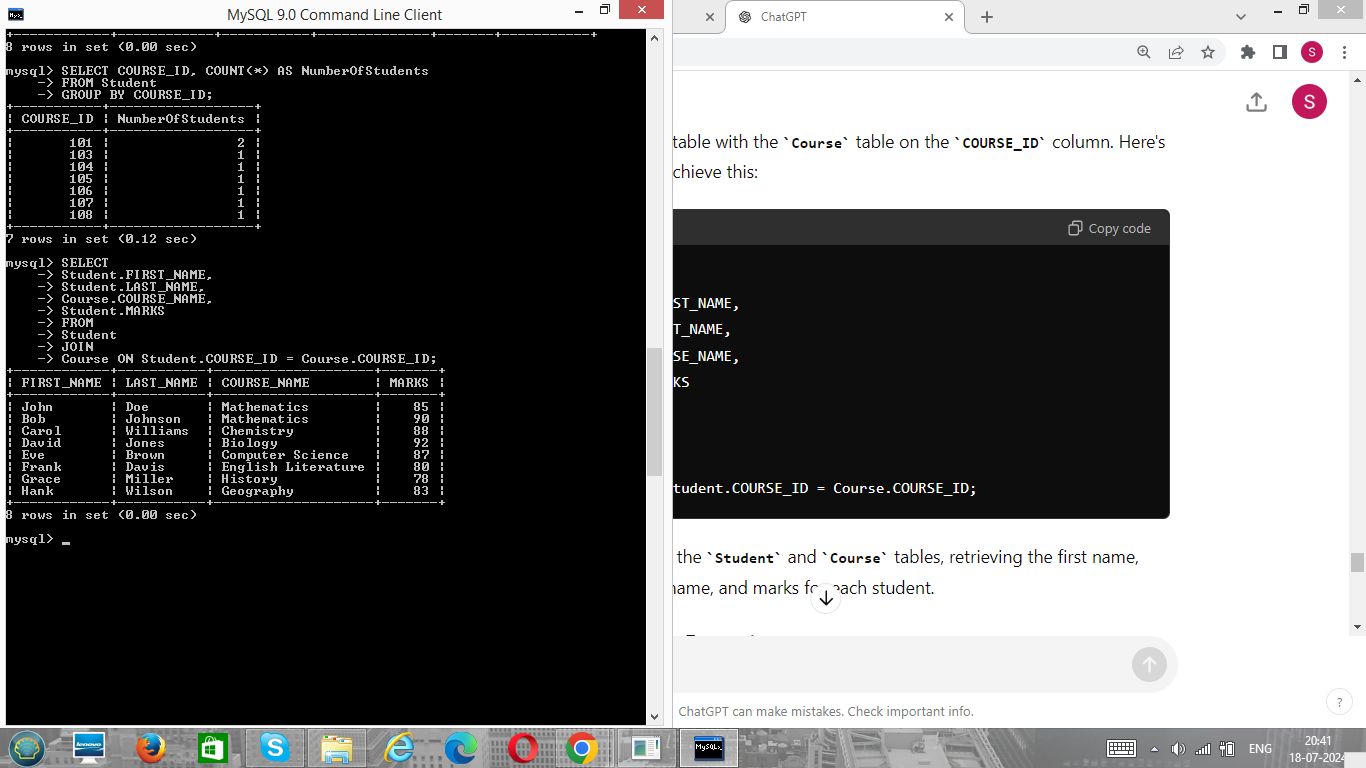


**f. Write a query to get the student name, course name and marks of the students.**

SELECT s.FIRST\_NAME, s.LAST\_NAME, c.COURSE\_NAME, s.MARKS

FROM Student s

JOIN Course c ON s.COURSE\_ID = c.COURSE\_ID;



**g. Write a query to get the Average marks of students course wise.**

SELECT c.COURSE\_NAME, AVG(s.MARKS) AS AVERAGE\_MARKS

FROM Student s

JOIN Course c ON s.COURSE\_ID = c.COURSE\_ID

GROUP BY c.COURSE\_NAME;

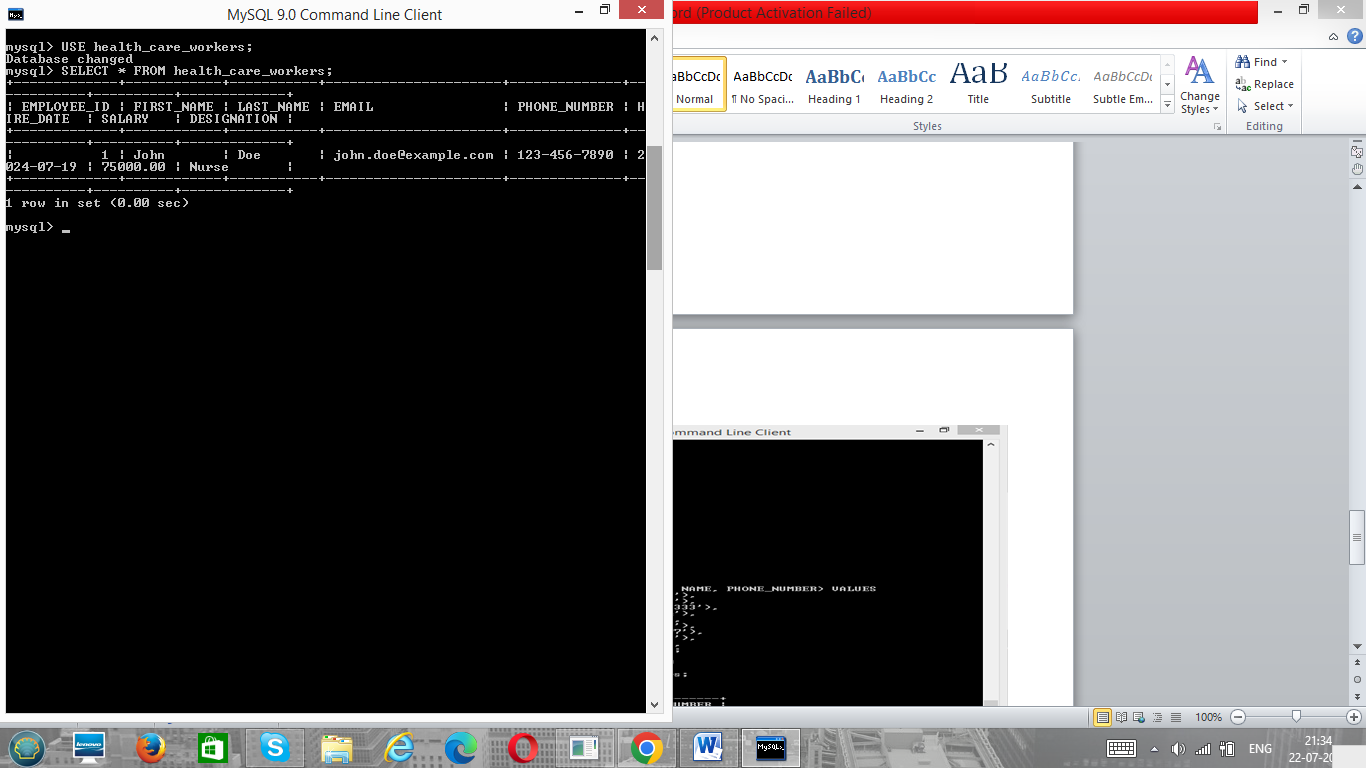
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**2.  Create database for hospital management system & Perform the following tasks:**

**a. Create HEALTH CARE WORKERS table with following attributes (EMPLOYEE\_ID , FIRST\_NAME, LAST\_NAME,EMAIL, PHONE\_NUMBER, HIRE\_DATE, SALARY, DESIGNATION).**

CREATE DATABASE health\_care\_workers;

USE health\_care\_workers;

**b. Create PATIENT table with following attributes (PATIENT\_ID,NAME, PHONE\_NUMBER).**

CREATE TABLE HEALTH\_CARE\_WORKERS (

EMPLOYEE\_ID INT PRIMARY KEY,

FIRST\_NAME VARCHAR(50),

LAST\_NAME VARCHAR(50),

EMAIL VARCHAR(100),

PHONE\_NUMBER VARCHAR(15),

HIRE\_DATE DATE,

SALARY DECIMAL(10, 2),

DESIGNATION VARCHAR(50)

);

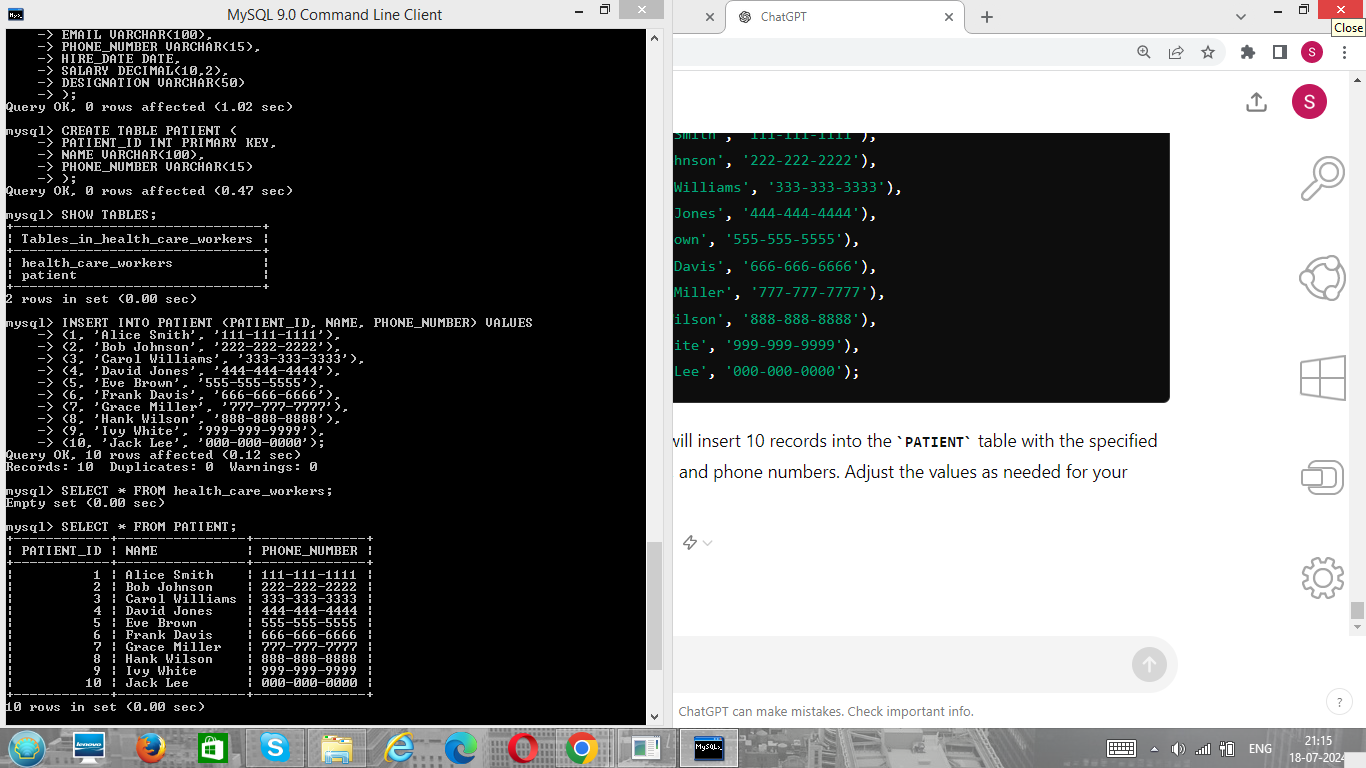
CREATE TABLE PATIENT (

PATIENT\_ID INT PRIMARY KEY,

NAME VARCHAR(100),

PHONE\_NUMBER VARCHAR(15)

);



**c. Write a SQL statement to insert 10 records with your own value into the tables.**

-- Insert records into HEALTH\_CARE\_WORKERS table

INSERT INTO HEALTH\_CARE\_WORKERS (EMPLOYEE\_ID, FIRST\_NAME, LAST\_NAME, EMAIL, PHONE\_NUMBER, HIRE\_DATE, SALARY, DESIGNATION) VALUES

(1, 'Alice', 'Smith', 'alice.smith@example.com', '123-456-7890', '2022-01-10', 30000.00, 'Doctor'),

(2, 'Bob', 'Johnson', 'bob.johnson@example.com', '234-567-8901', '2021-06-15', 25000.00, 'Nurse'),

(3, 'Carol', 'Williams', 'carol.williams@example.com', '345-678-9012', '2020-11-20', 28000.00, 'Pharmacist'),

(4, 'David', 'Brown', 'david.brown@example.com', '456-789-0123', '2019-03-25', 32000.00, 'Surgeon'),

(5, 'Eve', 'Jones', 'eve.jones@example.com', '567-890-1234', '2021-08-30', 26000.00, 'Nurse'),

(6, 'Frank', 'Garcia', 'frank.garcia@example.com', '678-901-2345', '2022-05-05', 29000.00, 'Doctor'),

(7, 'Grace', 'Martinez', 'grace.martinez@example.com', '789-012-3456', '2018-12-10', 27000.00, 'Pharmacist'),

(8, 'Hank', 'Rodriguez', 'hank.rodriguez@example.com', '890-123-4567', '2019-07-20', 31000.00, 'Surgeon'),

(9, 'Ivy', 'Lee', 'ivy.lee@example.com', '901-234-5678', '2020-04-15', 28000.00, 'Doctor'),

(10, 'Jack', 'Walker', 'jack.walker@example.com', '012-345-6789', '2021-09-10', 25000.00, 'Nurse');

-- Insert records into PATIENT table

INSERT INTO PATIENT (PATIENT\_ID, NAME, PHONE\_NUMBER) VALUES

(1, 'John Doe', '123-456-7890'),

(2, 'Jane Roe', '234-567-8901'),

(3, 'Mary Major', '345-678-9012'),

(4, 'James Smith', '456-789-0123'),

(5, 'Patricia Brown', '567-890-1234'),

(6, 'Michael Green', '678-901-2345'),

(7, 'Elizabeth White', '789-012-3456'),

(8, 'Robert Black', '890-123-4567'),

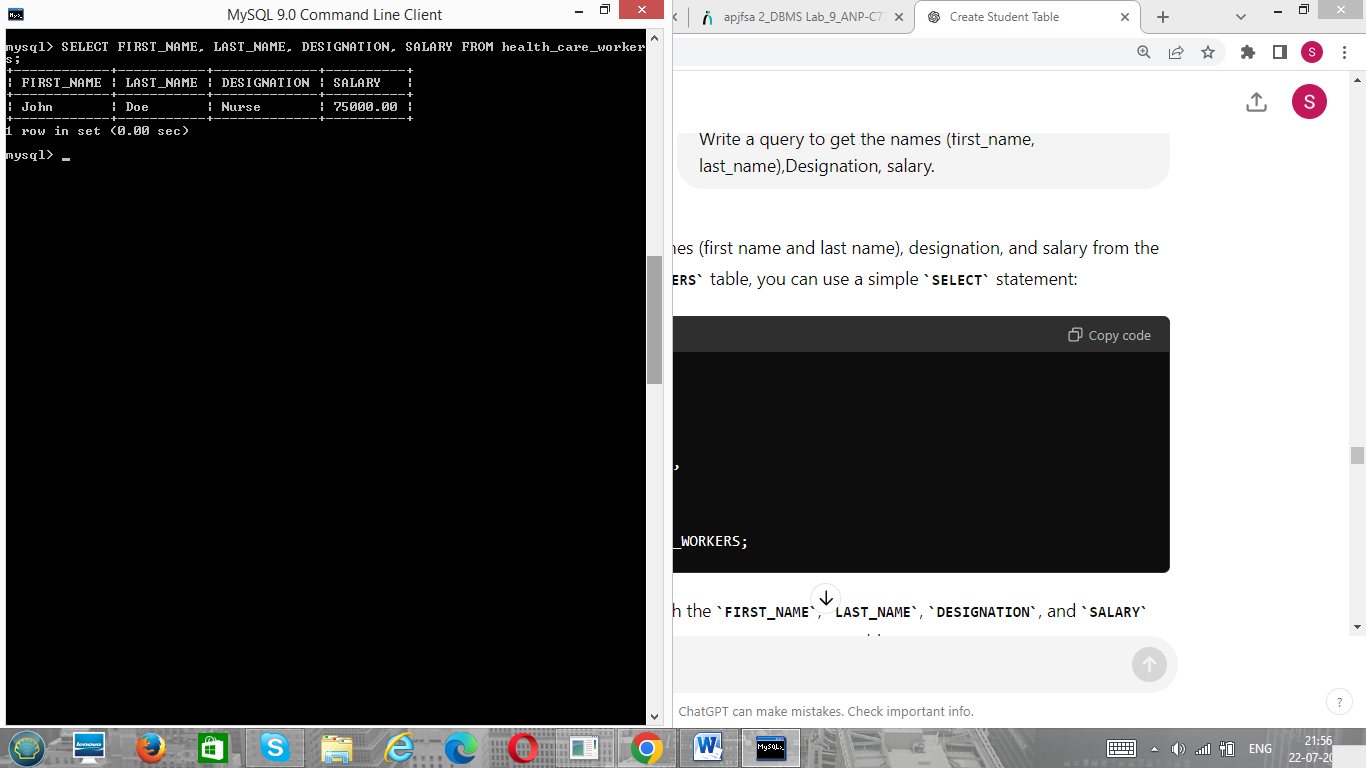
(9, 'Linda Harris', '901-234-5678'),

(10, 'William Lewis', '012-345-6789');

**d. Write a query to get the names (first\_name, last\_name),Designation, salary.**

SELECT FIRST\_NAME, LAST\_NAME, DESIGNATION, SALARY

FROM HEALTH\_CARE\_WORKERS;



**e. Write a query to get the number of employees with the same Designation**

SELECT DESIGNATION, COUNT(\*) AS NUM\_EMPLOYEES

FROM HEALTH\_CARE\_WORKERS

GROUP BY DESIGNATION;

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**f. Write a query to get employee name who are getting salary more than 25000.**

SELECT FIRST\_NAME, LAST\_NAME

FROM HEALTH\_CARE\_WORKERS

WHERE SALARY > 25000;

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**g. Fetch HEALTH CARE WORKERS name using their employee id.**

SELECT FIRST\_NAME, LAST\_NAME

FROM HEALTH\_CARE\_WORKERS

WHERE EMPLOYEE\_ID = ?; -- Replace ? with the specific EMPLOYEE\_ID

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**3.Consider two tables, customers and orders, with the following structures:**

**Customers Table: customer\_id (Primary Key) first\_name Last\_name**

**Orders Table: order\_id (Primary Key) customer\_id (Foreign Key) order\_date Total\_amount**

**Write an SQL query to retrieve the first and last names of customers along with the order date and total amount of their orders.**

**Use an INNER JOIN to connect the two tables.**

SELECT c.first\_name, c.last\_name, o.order\_date, o.total\_amount

FROM Customers c

INNER JOIN Orders o ON c.customer\_id = o.customer\_id;

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**4.Consider two tables, departments and employees, with the following structures:**

**Departments Table: department\_id (Primary Key) department\_name**

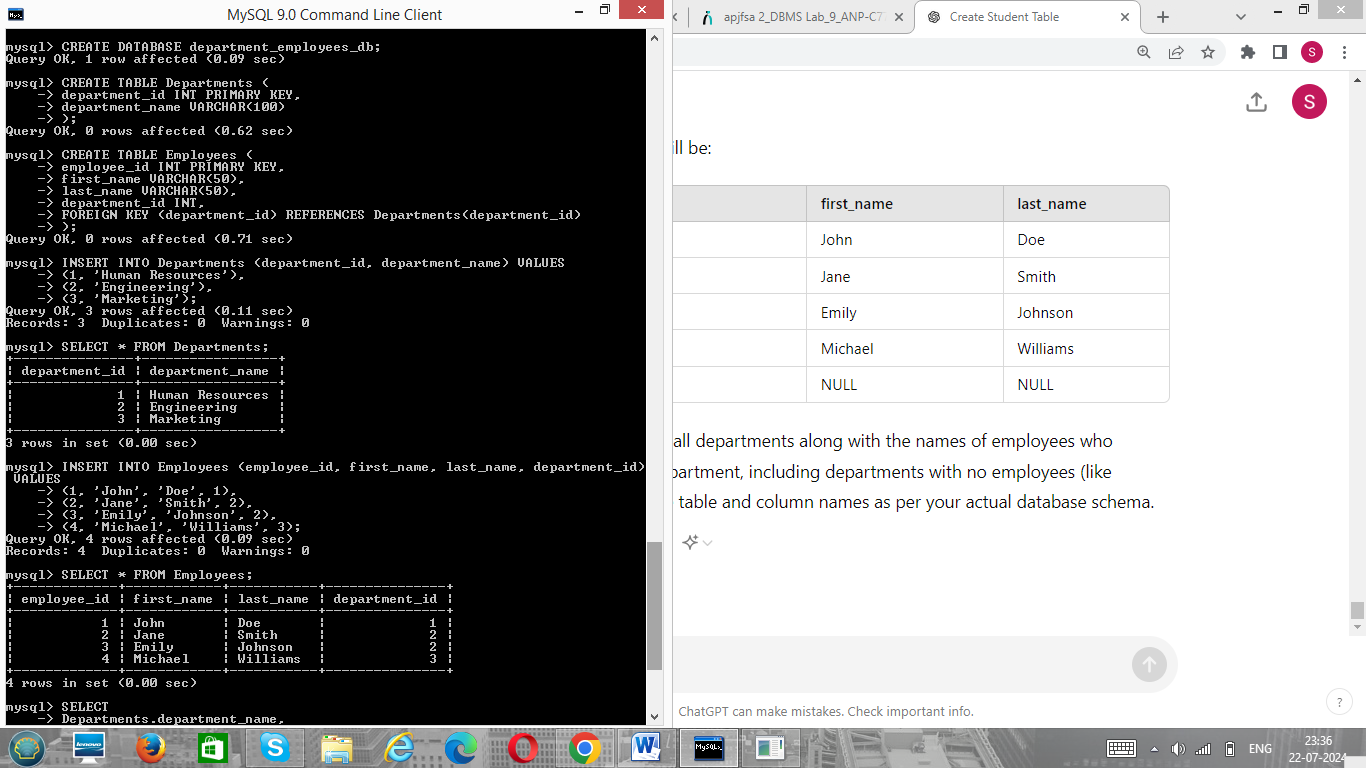
**Employees Table: employee\_id (Primary Key) first\_name last\_name department\_id (Foreign Key)**

**Write an SQL query to retrieve a list of all departments and the names of employees who belong to each department. Use a LEFT JOIN to include departments that have no employees.**

SELECT d.department\_name, e.first\_name, e.last\_name

FROM Departments d

LEFT JOIN Employees e ON d.department\_id = e.department\_id;



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**5. Write a program to show  JDBC connection with MYSQL and perform the following operations:**

**Create table Customer with following fields:**

**Custno, Custame,Custaddress,Phoneno, City, Pincode, Country**

**Insert 5 records in Customer table.**

**a.     Insert values**

**b.    Delete values**

**c.     update city name Shimla to Shilong.**

**d.    Show table in the console**

package anudip;

import java.sql.Connection;

import java.sql.DriverManager;

import java.sql.ResultSet;

import java.sql.Statement;

public class JdbcExample {

// Database URL, username and password

static final String DB\_URL = "jdbc:mysql://localhost:3306/customer\_db";

static final String USER = "root";

static final String PASS = "saylee\_@123";

public static void main(String[] args) {

Connection conn = null;

Statement stmt = null;

try {

// Register JDBC driver

Class.forName("com.mysql.cj.jdbc.Driver");

// Open a connection

System.out.println("Connecting to database...");

conn = DriverManager.getConnection(DB\_URL, USER, PASS);

// Execute a query to create table

System.out.println("Creating table...");

stmt = conn.createStatement();

String sql = "CREATE TABLE IF NOT EXISTS Customer " +

"(Custno INT PRIMARY KEY, " +

" Custname VARCHAR(255), " +

" Custaddress VARCHAR(255), " +

" Phoneno VARCHAR(15), " +

" City VARCHAR(50), " +

" Pincode VARCHAR(10), " +

" Country VARCHAR(50))";

stmt.executeUpdate(sql);

// Clear existing records

System.out.println("Clearing existing records...");

stmt.executeUpdate("DELETE FROM Customer");

// Insert 5 records

System.out.println("Inserting records into the table...");

stmt.executeUpdate("INSERT INTO Customer VALUES (1, 'Alice', '123 Maple St', '1234567890', 'New York', '10001', 'USA')");

stmt.executeUpdate("INSERT INTO Customer VALUES (2, 'Bob', '456 Oak St', '0987654321', 'Los Angeles', '90001', 'USA')");

stmt.executeUpdate("INSERT INTO Customer VALUES (3, 'Charlie', '789 Pine St', '1112223333', 'Shimla', '171001', 'India')");

stmt.executeUpdate("INSERT INTO Customer VALUES (4, 'David', '101 Birch St', '4445556666', 'Chicago', '60601', 'USA')");

stmt.executeUpdate("INSERT INTO Customer VALUES (5, 'Eve', '202 Elm St', '7778889999', 'Houston', '77001', 'USA')");

// a. Insert a new value

System.out.println("Inserting a new record...");

stmt.executeUpdate("INSERT INTO Customer VALUES (6, 'Frank', '303 Cedar St', '1231231234', 'Miami', '33101', 'USA')");

// b. Delete a value

System.out.println("Deleting a record...");

stmt.executeUpdate("DELETE FROM Customer WHERE Custno = 2");

// c. Update city name Shimla to Shilong

System.out.println("Updating city name...");

stmt.executeUpdate("UPDATE Customer SET City = 'Shilong' WHERE City = 'Shimla'");

// d. Show table in the console

System.out.println("Displaying records...");

ResultSet rs = stmt.executeQuery("SELECT \* FROM Customer");

while (rs.next()) {

// Retrieve by column name

int custno = rs.getInt("Custno");

String custname = rs.getString("Custname");

String custaddress = rs.getString("Custaddress");

String phoneno = rs.getString("Phoneno");

String city = rs.getString("City");

String pincode = rs.getString("Pincode");

String country = rs.getString("Country");

// Display values

System.out.print("Custno: " + custno);

System.out.print(", Custname: " + custname);

System.out.print(", Custaddress: " + custaddress);

System.out.print(", Phoneno: " + phoneno);

System.out.print(", City: " + city);

System.out.print(", Pincode: " + pincode);

System.out.println(", Country: " + country);

}

rs.close();

stmt.close();

conn.close();

} catch (Exception e) {

e.printStackTrace();

} finally {

try {

if (stmt != null) stmt.close();

if (conn != null) conn.close();

} catch (Exception e) {

e.printStackTrace();

}

}

}

}

