Name: Poorvaja Bhorunde Batch: ANP-C7781 Student ID: AF0403155

1. Perform the following tasks:

a. Create Student table with following attributes (STUDENT_ID, FIRST_NAME, LAST_NAME, PHONE_NUMBER, MARKS, COURSE_ID).

```
mysql> CREATE TABLE Student (
    ->     STUDENT_ID INT PRIMARY KEY,
    ->     FIRST_NAME VARCHAR(50),
    ->     LAST_NAME VARCHAR(50),
    ->     PHONE_NUMBER VARCHAR(20),
    ->     MARKS INT,
    ->     COURSE_ID INT
    -> );
Query OK, 0 rows affected (0.02 sec)
```

b. Create Course table with following attributes (COURSE_ID, COURSE_NAME).

```
mysql> CREATE TABLE Course (
    ->     COURSE_ID INT PRIMARY KEY,
    ->     COURSE_NAME VARCHAR(50)
    -> );
Query OK, 0 rows affected (0.03 sec)
```

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

```
mysql> INSERT INTO Course (COURSE_ID, COURSE_NAME)
    -> VALUES
    ->   (1, 'NLP'),
    ->   (2, 'DL'),
    ->   (3, 'BlockChain');
Query OK, 3 rows affected (0.01 sec)
Records: 3  Duplicates: 0  Warnings: 0

mysql>
mysql> INSERT INTO Student (STUDENT_ID, FIRST_NAME, LAST_NAME, PHONE_NUMBER, MARKS, COURSE_ID)
    -> VALUES
    -> (101, 'Amit', 'Deshmukh', '9876543210', 85, 1),
    -> (102, 'Priya', 'Patil', '9876543211', 92, 2),
    -> (103, 'Ravi', 'Shinde', '9876543212', 78, 3),
    -> (104, 'Sita', 'Kulkarni', '9876543213', 88,1),
    -> (105, 'Raj', 'Jadhav', '9876543214', 90, 2),
    -> (106, 'Sneha', 'Gadekar', '9876543215', 80, 3),
    -> (107, 'Anil', 'Chavan', '9876543216', 82, 1),
    -> (108, 'Meera', 'Rao', '9876543217', 95, 2);
Query OK, 8 rows affected (0.00 sec)
Records: 8  Duplicates: 0  Warnings: 0
```

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

```
mysql> SELECT COURSE_ID, COUNT(*) AS StudentCount
    -> FROM Student
    -> GROUP BY COURSE_ID;
+-----------+--------------+
| COURSE_ID | StudentCount |
+-----------+--------------+
|         1 |            3 |
|         2 |            3 |
|         3 |            2 |
+-----------+--------------+
3 rows in set (0.00 sec)
```

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

```
mysql> SELECT Student.FIRST_NAME, Student.LAST_NAME, Course.COURSE_NAME, Student.MARKS
    -> FROM Student
    -> INNER JOIN Course ON Student.COURSE_ID = Course.COURSE_ID;
+------------+-----------+-------------+-------+
| FIRST_NAME | LAST_NAME | COURSE_NAME | MARKS |
+------------+-----------+-------------+-------+
| Amit       | Deshmukh  | NLP         |    85 |
| Priya      | Patil     | DL          |    92 |
| Ravi       | Shinde    | BlockChain  |    78 |
| Sita       | Kulkarni  | NLP         |    88 |
| Raj        | Jadhav    | DL          |    90 |
| Sneha      | Gadekar   | BlockChain  |    80 |
| Anil       | Chavan    | NLP         |    82 |
| Meera      | Rao       | DL          |    95 |
+------------+-----------+-------------+-------+
8 rows in set (0.00 sec)
```

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

```
mysql> SELECT Course.COURSE_NAME, AVG(Student.MARKS) AS AverageMarks
    -> FROM Student
    -> INNER JOIN Course ON Student.COURSE_ID = Course.COURSE_ID
    -> GROUP BY Course.COURSE_NAME;
+-------------+--------------+
| COURSE_NAME | AverageMarks |
+-------------+--------------+
| NLP         |      85.0000 |
| DL          |      92.3333 |
| BlockChain  |      79.0000 |
+-------------+--------------+
3 rows in set (0.01 sec)
```

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).

```
mysql> CREATE TABLE HEALTH_CARE_WORKERS (
    ->     EMPLOYEE_ID INT PRIMARY KEY,
    ->     FIRST_NAME VARCHAR(50),
    ->     LAST_NAME VARCHAR(50),
    ->     EMAIL VARCHAR(100),
    ->     PHONE_NUMBER VARCHAR(20),
    ->     HIRE_DATE DATE,
    ->     SALARY DECIMAL(10,2),
    ->     DESIGNATION VARCHAR(50)
    -> );
Query OK, 0 rows affected (0.02 sec)
```

b. Create PATIENT table with following attributes (PATIENT_ID, NAME, PHONE_NUMBER).

```
mysql> CREATE TABLE PATIENT (
    ->     PATIENT_ID INT PRIMARY KEY,
    ->     NAME VARCHAR(100),
    ->     PHONE_NUMBER VARCHAR(20)
    -> );
Query OK, 0 rows affected (0.03 sec)
```

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

```
mysql> INSERT INTO HEALTH_CARE_WORKERS (EMPLOYEE_ID, FIRST_NAME, LAST_NAME, EMAIL, PHONE_NUMBER, HIRE_DATE, SALARY, DESIGNATION)
    -> VALUES
    ->   (1, 'Rajesh', 'Kumar', 'rajeshkumar@example.com', '1234567890', '2023-01-01', 50000.00, 'Doctor'),
    ->   (2, 'Sapna', 'Sharma', 'sapnasharma@example.com', '9876543210', '2022-05-15', 45000.00, 'Nurse'),
    ->   (3, 'Ajay', 'Verma', 'ajayverma@example.com', '4567890123', '2021-11-20', 55000.00, 'Surgeon'),
    ->   (4, 'Seema', 'Mishra', 'seemamishra@example.com', '6789012345', '2023-03-30', 47000.00, 'Pharmacist'),
    ->   (5, 'Rajni', 'Gupta', 'rajningupta@example.com', '2345678901', '2020-08-10', 43000.00, 'Lab Technician'),
    ->   (6, 'Sonu', 'Yadav', 'sonuyadav@example.com', '3456789012', '2022-06-25', 49000.00, 'Physical Therapist'),
    ->   (7, 'Neha', 'Singh', 'nehasingh@example.com', '4567890123', '2021-09-15', 46000.00, 'Medical Assistant'),
    ->   (8, 'Deepak', 'Shriwas', 'deepakshri@example.com', '5678901234', '2023-02-20', 52000.00, 'Radiologist'),
    ->   (9, 'Pooja', 'Kant', 'poojakant@example.com', '6789012345', '2022-10-05', 44000.00, 'Emergency Medical Technician'),
    ->   (10, 'Ajay', 'Kumar', 'ajaykumar@example.com', '7890123456', '2021-12-12', 48000.00, 'Anesthesiologist');
Query OK, 10 rows affected (0.01 sec)
Records: 10  Duplicates: 0  Warnings: 0
```

d. Write a query to get the names first_name, last_name, Designation, salary.

```
mysql> SELECT FIRST_NAME, LAST_NAME, DESIGNATION, SALARY
    -> FROM HEALTH_CARE_WORKERS;
+------------+-----------+------------------------------+----------+
| FIRST_NAME | LAST_NAME | DESIGNATION                  | SALARY   |
+------------+-----------+------------------------------+----------+
| Rajesh     | Kumar     | Doctor                       | 50000.00 |
| Sapna      | Sharma    | Nurse                        | 45000.00 |
| Ajay       | Verma     | Surgeon                      | 55000.00 |
| Seema      | Mishra    | Pharmacist                   | 47000.00 |
| Rajni      | Gupta     | Lab Technician               | 43000.00 |
| Sonu       | Yadav     | Physical Therapist           | 49000.00 |
| Neha       | Singh     | Medical Assistant            | 46000.00 |
| Deepak     | Shriwas   | Radiologist                  | 52000.00 |
| Pooja      | Kant      | Emergency Medical Technician | 44000.00 |
| Ajay       | Kumar     | Anesthesiologist             | 48000.00 |
+------------+-----------+------------------------------+----------+
10 rows in set (0.00 sec)
```

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

```
mysql>
mysql> SELECT DESIGNATION, COUNT(*) AS EmployeeCount
    -> FROM HEALTH_CARE_WORKERS
    -> GROUP BY DESIGNATION;
+------------------------------+---------------+
| DESIGNATION                  | EmployeeCount |
+------------------------------+---------------+
| Doctor                       |             1 |
| Nurse                        |             1 |
| Surgeon                      |             1 |
| Pharmacist                   |             1 |
| Lab Technician               |             1 |
| Physical Therapist           |             1 |
| Medical Assistant            |             1 |
| Radiologist                  |             1 |
| Emergency Medical Technician |             1 |
| Anesthesiologist             |             1 |
+------------------------------+---------------+
10 rows in set (0.00 sec)

mysql>
```

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

```
mysql> SELECT FIRST_NAME, LAST_NAME
    -> FROM HEALTH_CARE_WORKERS
    -> WHERE SALARY > 25000;
+------------+-----------+
| FIRST_NAME | LAST_NAME |
+------------+-----------+
| Rajesh     | Kumar     |
| Sapna      | Sharma    |
| Ajay       | Verma     |
| Seema      | Mishra    |
| Rajni      | Gupta     |
| Sonu       | Yadav     |
| Neha       | Singh     |
| Deepak     | Shriwas   |
| Pooja      | Kant      |
| Ajay       | Kumar     |
+------------+-----------+
10 rows in set (0.00 sec)
```

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

```
mysql> SELECT FIRST_NAME, LAST_NAME
    -> FROM HEALTH_CARE_WORKERS
    -> WHERE EMPLOYEE_ID = (employee_id);
+------------+-----------+
| FIRST_NAME | LAST_NAME |
+------------+-----------+
| Rajesh     | Kumar     |
| Sapna      | Sharma    |
| Ajay       | Verma     |
| Seema      | Mishra    |
| Rajni      | Gupta     |
| Sonu       | Yadav     |
| Neha       | Singh     |
| Deepak     | Shriwas   |
| Pooja      | Kant      |
| Ajay       | Kumar     |
+------------+-----------+
10 rows in set (0.00 sec)
```

```
mysql>
mysql> SELECT FIRST_NAME, LAST_NAME
    -> FROM HEALTH_CARE_WORKERS
    -> WHERE EMPLOYEE_ID = 1;
+------------+-----------+
| FIRST_NAME | LAST_NAME |
+------------+-----------+
| Rajesh     | Kumar     |
+------------+-----------+
1 row in set (0.00 sec)
```

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.

```
mysql> create table Customers(
    -> custermer_id INT PRIMARY KEY,
    -> first_name VARCHAR(50),
    -> last_name VARCHAR(50)
    -> );
Query OK, 0 rows affected (0.02 sec)
```

```
mysql> INSERT INTO Customers (custermer_id, first_name, last_name)VALUES
    -> (1, 'Rahul', 'Sharma'),
    ->   (2, 'Priya', 'Verma'),
    ->   (3, 'Amit', 'Kumar'),
    ->   (4, 'Sneha', 'Patel'),
    ->   (5, 'Vikram', 'Singh'),
    ->   (6, 'Neha', 'Gupta');
Query OK, 6 rows affected (0.01 sec)
Records: 6  Duplicates: 0  Warnings: 0
```

```
mysql> SELECT * FROM Customers;
+--------------+------------+-----------+
| custermer_id | first_name | last_name |
+--------------+------------+-----------+
|            1 | Rahul      | Sharma    |
|            2 | Priya      | Verma     |
|            3 | Amit       | Kumar     |
|            4 | Sneha      | Patel     |
|            5 | Vikram     | Singh     |
|            6 | Neha       | Gupta     |
+--------------+------------+-----------+
6 rows in set (0.00 sec)
```

```
mysql> CREATE TABLE Orders (
    ->     order_id INT PRIMARY KEY,
    ->     customer_id INT,
    ->     order_date DATE,
    ->     total_amount DECIMAL(10,2)
    -> );
Query OK, 0 rows affected (0.03 sec)

mysql>
```

```
mysql> INSERT INTO Orders(order_id,customer_id,order_date,total_amount
    -> ) VALUES
    ->      (101,123,'2023-07-01',55000.00),
    ->      (102,234,'2023-07-02',200.00),
    ->      (103,345,'2023-07-07',4900.00),
    ->      (104,456,'2023-07-17',67000.00),
    ->      (105,567,'2023-07-30',6000.00);
Query OK, 5 rows affected (0.01 sec)
Records: 5  Duplicates: 0  Warnings: 0
```

```
mysql> SELECT * FROM Orders;
+----------+-------------+------------+--------------+
| order_id | customer_id | order_date | total_amount |
+----------+-------------+------------+--------------+
|      101 |         123 | 2023-07-01 |     55000.00 |
|      102 |         234 | 2023-07-02 |       200.00 |
|      103 |         345 | 2023-07-07 |      4900.00 |
|      104 |         456 | 2023-07-17 |     67000.00 |
|      105 |         567 | 2023-07-30 |      6000.00 |
+----------+-------------+------------+--------------+
5 rows in set (0.00 sec)
```

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

Departments Table: department_id (Primary Key) department_name

```
mysql> create table departments(
    -> department_id INT PRIMARY KEY,
    -> department_name VARCHAR(100)
    -> );
Query OK, 0 rows affected (0.02 sec)

mysql> create table employees(
    -> employee_id INT PRIMARY KEY,
    -> first_name VARCHAR(50),
    -> last_name VARCHAR(50),
    -> department_id INT,
    -> FOREIGN KEY(department_id) REFERENCES departments(department_id)
    -> );
Query OK, 0 rows affected (0.03 sec)
```

Employees Table: employee_id (Primary Key) first_name last_name department_id (Foreign Key)

```
mysql> INSERT INTO departments(department_id,department_name) VALUES
    -> (1,'Education'),
    -> (2,'Teachers'),
    -> (3,'Staff'),
    -> (4,'Exams');
Query OK, 4 rows affected (0.00 sec)
Records: 4  Duplicates: 0  Warnings: 0

mysql> select * from departments;
+---------------+-----------------+
| department_id | department_name |
+---------------+-----------------+
|             1 | Education       |
|             2 | Teachers        |
|             3 | Staff           |
|             4 | Exams           |
+---------------+-----------------+
4 rows in set (0.00 sec)
```

```
mysql> Insert INTO employees(employee_id,first_name,last_name,department_id) VALUES
    -> (101, 'Amit', 'Sharma', 1),
    ->   (102, 'Ravi', 'Kumar', 2),
    ->   (103, 'Suman', 'Verma', 3),
    ->   (104, 'Priya', 'Patel', 4),
    ->   (105, 'Vikash', 'Singh', 1),
    ->   (106, 'Meena', 'Gupta', 2),
    ->   (107, 'Rajesh', 'Yadav', 3),
    ->   (108, 'Neha', 'Jain', 4);
Query OK, 8 rows affected (0.01 sec)
Records: 8  Duplicates: 0  Warnings: 0

mysql> select * from employees;
+-------------+------------+-----------+---------------+
| employee_id | first_name | last_name | department_id |
+-------------+------------+-----------+---------------+
|         101 | Amit       | Sharma    |             1 |
|         102 | Ravi       | Kumar     |             2 |
|         103 | Suman      | Verma     |             3 |
|         104 | Priya      | Patel     |             4 |
|         105 | Vikash     | Singh     |             1 |
|         106 | Meena      | Gupta     |             2 |
|         107 | Rajesh     | Yadav     |             3 |
|         108 | Neha       | Jain      |             4 |
+-------------+------------+-----------+---------------+
8 rows in set (0.00 sec)
```

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.

```
mysql> SELECT
    ->     d.department_name,
    ->     e.first_name,
    ->     e.last_name
    -> FROM
    ->     Departments d
    -> LEFT JOIN
    ->     Employees e
    -> ON
    ->     d.department_id = e.department_id
    -> ORDER BY
    ->     d.department_name;
+-----------------+------------+-----------+
| department_name | first_name | last_name |
+-----------------+------------+-----------+
| Education       | Amit       | Sharma    |
| Education       | Vikash     | Singh     |
| Exams           | Priya      | Patel     |
| Exams           | Neha       | Jain      |
| Staff           | Suman      | Verma     |
| Staff           | Rajesh     | Yadav     |
| Teachers        | Ravi       | Kumar     |
| Teachers        | Meena      | Gupta     |
+-----------------+------------+-----------+
8 rows in set (0.00 sec)
```

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

Create table Customer with following fields:

Custno, Custname, Custaddress,Phoneno, City, Pincode, Country

Insert 5 records in Customer table.

a. Insert values
b. Delete values
c. update city name .
d. Show table in the console

Jdbclab.java

```
package DEMO;
import java.sql.*;

public class Insertlabs {

   public static void main(String[] args) {

      Connection con = null;
      Statement st = null;

      try {
         Class.forName("com.mysql.cj.jdbc.Driver");
         con = DriverManager.getConnection("jdbc:mysql://localhost:3306/labs", "root",
"Poorva@123");
         st = con.createStatement();

         // Create table
         String createTableSQL = "CREATE TABLE IF NOT EXISTS Customers (" +
               "Custno INT PRIMARY KEY, " +
               "Custname VARCHAR(100), " +
               "Custaddress VARCHAR(255), " +
               "Phoneno VARCHAR(20), " +
               "City VARCHAR(50), " +
               "Pincode VARCHAR(10), " +
               "Country VARCHAR(50)" +
```

```
                ")";
        st.executeUpdate(createTableSQL);
        System.out.println("Customer table created successfully");

        // Insert records
        String insertSQL = "INSERT INTO Customers (Custno, Custname, Custaddress,
Phoneno, City, Pincode, Country) VALUES " +
                           "(1, 'Rahul Sharma', '123 Main St', '9876543210', 'Mumbai',
'400001', 'India'),"+
                            "(2, 'Priya Verma', '456 Park Ave', '9876543211', 'Delhi', '110001',
'India'),"+
                            "(3, 'Amit Kumar', '789 Elm St', '9876543212', 'Bangalore',
'560001', 'India'),"+
                            "(4, 'Sneha Patel', '101 Pine St', '9876543213', 'Ahmedabad',
'380001', 'India'),"+
                            "(5, 'Vikram Singh', '202 Oak St', '9876543214', 'Chennai',
'600001', 'India')";
        st.executeUpdate(insertSQL);
        System.out.println("5 values inserted into Customers table");

      } catch (Exception e) {
         e.printStackTrace();
      } finally {
         try {
            if (st != null) st.close();
            if (con != null) con.close();
         } catch (SQLException se) {
            se.printStackTrace();
         }
      }
   }
}
```

```
Customer table created successfully
5 values inserted into Customers table
```

```
mysql> use labs;
Database changed
mysql> select * from Customers;
+--------+--------------+--------------+------------+-----------+---------+---------+
| Custno | Custname     | Custaddress  | Phoneno    | City      | Pincode | Country |
+--------+--------------+--------------+------------+-----------+---------+---------+
|      1 | Rahul Sharma | 123 Main St  | 9876543210 | Mumbai    | 400001  | India   |
|      2 | Priya Verma  | 456 Park Ave | 9876543211 | Delhi     | 110001  | India   |
|      3 | Amit Kumar   | 789 Elm St   | 9876543212 | Bangalore | 560001  | India   |
|      4 | Sneha Patel  | 101 Pine St  | 9876543213 | Ahmedabad | 380001  | India   |
|      5 | Vikram Singh | 202 Oak St   | 9876543214 | Chennai   | 600001  | India   |
+--------+--------------+--------------+------------+-----------+---------+---------+
5 rows in set (0.00 sec)
```

deletejdbcLab.java

```
package DEMO;
import java.sql.Connection;
import java.sql.DriverManager;
import java.sql.PreparedStatement;

public class deleteLabs {

	public static void main(String[] args) throws Exception {
		String custname1 = "Sneha Patel";
		Class.forName("com.mysql.cj.jdbc.Driver");

		Connection con =
DriverManager.getConnection("jdbc:mysql://localhost:3306/labs","root","Poorva@123"
);

		PreparedStatement ps = con.prepareStatement("delete from Customers
where Custname =?");
		ps.setString(1, custname1);

		int count = ps.executeUpdate();
		if(count > 0)
		{
			System.out.println("Details of Customer Sneha Patel Deleted from
table");
		}
		else
		{
			System.out.println("Failed to delete details from table");

		}

	}

}
```

Details of Customer Sneha Patel Deleted from table

```
mysql> select * from Customers;
+--------+--------------+--------------+------------+-----------+---------+---------+
| Custno | Custname     | Custaddress  | Phoneno    | City      | Pincode | Country |
+--------+--------------+--------------+------------+-----------+---------+---------+
|      1 | Rahul Sharma | 123 Main St  | 9876543210 | Mumbai    | 400001  | India   |
|      2 | Priya Verma  | 456 Park Ave | 9876543211 | Delhi     | 110001  | India   |
|      3 | Amit Kumar   | 789 Elm St   | 9876543212 | Bangalore | 560001  | India   |
|      5 | Vikram Singh | 202 Oak St   | 9876543214 | Chennai   | 600001  | India   |
+--------+--------------+--------------+------------+-----------+---------+---------+
4 rows in set (0.00 sec)
```

updatejdbcLab.java

```
package DEMO;
import java.sql.*;
public class updateLabs {

	public static void main(String[] args) {

	try {

	String city1 = "Varanasi";
	Class.forName("com.mysql.cj.jdbc.Driver");

	Connection con =
DriverManager.getConnection("jdbc:mysql://localhost:3306/labs","root","Poorva@123");

	PreparedStatement ps = con.prepareStatement("update Customers set City =?");
	ps.setString(1, city1);

	int count = ps.executeUpdate();
	if(count > 0)
	{
	System.out.println("cities updated to Varanasi");
	}
	else
	{
	System.out.println("Failed to update details");
	}
	}catch (Exception e) {
	System.out.println(e);
```

```
        }
        }


        }
```

```
cities updated to Varanasi
```

```
mysql> select * from Customers;
+--------+--------------+--------------+------------+----------+---------+---------+
| Custno | Custname     | Custaddress  | Phoneno    | City     | Pincode | Country |
+--------+--------------+--------------+------------+----------+---------+---------+
|      1 | Rahul Sharma | 123 Main St  | 9876543210 | Varanasi | 400001  | India   |
|      2 | Priya Verma  | 456 Park Ave | 9876543211 | Varanasi | 110001  | India   |
|      3 | Amit Kumar   | 789 Elm St   | 9876543212 | Varanasi | 560001  | India   |
+--------+--------------+--------------+------------+----------+---------+---------+
3 rows in set (0.00 sec)
```