1.Perform the following tasks:

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

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

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

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

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

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

Code:-

```
CREATE TABLE course (
  Course_id INT PRIMARY KEY,
  Course_name VARCHAR(50) NOT NULL
);

INSERT INTO course (course_id, course_name) VALUES
(101, “Java”),
(102, “Python”),
(103, “SQL”);

SELECT * FROM course;

CREATE TABLE student (
  Student_id INT PRIMARY KEY,
  First_name VARCHAR(50) NOT NULL,
  Last_name VARCHAR(50) NOT NULL,
  Phone_number INT NOT NULL,
  Marks INT NOT NULL,
  Course_id INT ,
  FOREIGN KEY (course_id) REFERENCES course(course_id)
);

INSERT INTO student
(student_id, first_name, last_name, phone_number, marks, course_id) VALUES
(1, “Pawan”, “Maurya”, 9373927255, 64, 102),
(2, “Deepak”, “Yadav”, 9263648947, 85, 103),
(3, “Nikhil”, “Pandey”, 5646476474, 83, 101),
(4, “Govind”, “Gupta”, 4274648553, 73, 103),
(5, “Sanjay”, “Chaurasia”, 5392097542, 77, 103),
(6, “Subham”, “Sharma”, 9182539274, 92, 102),
(7, “Rajan”, “Yadav”, 9102847396, 71, 102),
(8, “Shivam”, “Yadav”, 6378337468, 90, 101);

SELECT * FROM student;

SELECT course.course_id, course_name, count(student_id) FROM student INNER
JOIN course ON student.course_id = course.course_id GROUP BY
course.course_id;

SELECT first_name, last_name, course_name, marks FROM student INNER JOIN
course ON student.course_id = course.course_id;
```

```
SELECT course.course_id, course_name, avg(marks) FROM student INNER JOIN
course ON student.course_id = course.course_id GROUP BY course.course_id;
```

Output:-

course_id	course_name	count(student_id)
101	Java	2
102	Python	3
103	SQL	3

first_name	last_name	course_name	marks
Pawan	Maurya	Python	64
Deepak	Yadav	SQL	85
Nikhil	Pandey	Java	83
Govind	Gupta	SQL	73
Sanjay	Chaurasia	SQL	77
Subham	Sharma	Python	92
Rajan	Yadav	Python	71
Shivam	Yadav	Java	90

course_id	course_name	avg(marks)
101	Java	86.5
102	Python	75.6
103	SQL	78.3

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).

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

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

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

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

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

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

Code:-

```
CREATE DATABASE hospital_db;

USE DATABASE hospital_db;

CREATE TABLE health_care_workers ( employee_id INT PRIMARY KEY,
  First_name VARCHAR(50) NOT NULL,
  Last_name VARCHAR(50) NOT NULL,
  Email VARCHAR(100) UNIQUE,
  Phone_number FLOAT UNIQUE,
  Hire_date DATE,
  Salary FLOAT  NOT NULL,
  Designation VARCHAR(50) NOT NULL
);

CREATE TABLE patient (
  Patient_id INT PRIMARY KEY,
  Name VARCHAR(50) NOT NULL,
  Phone_number INT UNIQUE
);


INSERT INTO health_care_workers
(employee_id, first_name, last_name, email, phone_number, hire_date,
salary, designation) VALUES
(1, 'Dev', 'Jaiswal', 'dev@example.com', 2555312348, '2023-01-10',
30000.00, 'Psychologist'),
(2, 'Sahil', 'Javiya', 'sahil@example.com', 5558635678, '2022-03-15',
35000.00, 'Physician'),
(3, 'Vidya', 'Pillai', 'vidya@example.com', 2835558765, '2021-06-20',
22000.00, 'Nurse'),
(4, 'Ayush', 'Sawant', 'ayush@example.com', 0955543210, '2023-07-22',
25000.00, 'Pharmacist'),
(5, 'Vikram', 'Rathore', 'vikram@example.com', 5553456222, '2020-11-05',
20000.00, 'Ward boy'),
(6, 'Sneha', 'Patil', 'sneha@example.com', 5551117890, '2022-09-12',
35000.00, 'Physician'),
(7, 'Aditi', 'Sharma', 'aditi@example.com', 1555123451, '2023-02-08',
20000.00, 'Nurse'),
(8, 'Akash', 'Gupta', 'akash@example.com', 3555267893, '2021-12-25',
22000.00, 'Ward boy'),
(9, 'Ravi', 'Yadav', 'ravi@example.com', 6755509876, '2020-10-14',
40000.00, 'Surgen'),
(10, 'Nisha', 'Gupta', 'nisha@example.com', 2455585432, '2022-04-01',
20000.00, 'Nurse');
```

```
INSERT INTO patient
(patient_id, name, phone_number) VALUES
(1111, ‘Pawan Maurya’, 5551111222),
(1112, ‘Divya Kapoor’, 5557282222),
(1113, ‘Sarang Malve’, 5550203333),
(1114, ‘Rajan Yadav’, 5554444131),
(1115, ‘Sunny Pal’, 1825555555),
(1116, ‘Alok Prajapati’, 0205556666),
(1117, ‘Niraj Yadav’, 5557387777),
(1118, ‘Pradeep Yadav’, 9255538888),
(1119, ‘Sarvesh Pandey’, 0555899998),
(1120, ‘Kavya Mishra’, 0555200001);


SELECT first_name, last_name, designation, salary FROM health_care_workers;

SELECT designation, count(employee_id) FROM health_care_workers GROUP BY
designation;

SELECT first_name FROM health_care_workers WHERE salary > 25000;


SELECT first_name, last_name FROM health_care_workers WHERE employee_id =
4;
```

Output:-

first_name	last_name	designation	salary
Dev	Jaiswal	Psychologist	30000.00
Sahil	Javiya	Physician	35000.00
Vidya	Pillai	Nurse	22000.00
Ayush	Sawant	Pharmacist	25000.00
Vikram	Rathore	Ward boy	20000.00
Sneha	Patil	Physician	35000.00
Aditi	Sharma	Nurse	20000.00
Akash	Gupta	Ward boy	22000.00
Ravi	Yadav	Surgen	40000.00
Nisha	Gupta	Nurse	20000.00

Designation	Count
Psychologist	1
Physician	2
Nurse	4
Pharmacist	1
Ward boy	2
Surgen	1

first_name
Dev
Sahil
Sneha
Ravi

first_name	last_name
Ayush	Sawant

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.

Code:-

```
CREATE TABLE customers (
  Customer_id INT PRIMARY KEY,
  First_name VARCHAR(50) NOT NULL,
  Last_name VARCHAR(50) NOT NULL
);

INSERT INTO customers
(customer_id, first_name, last_name) VALUES
(101, “Pawan”, “Maurya”),
(102, “Ayush”, “Sawant”),
(103, “Sahil”, “Javiya”),
(104, “Sarang”, “Malve”),
```

```
(105, “Dev”, “Jaiswal”);


CREATE TABLE orders (
  Order_id INT PRIMARY KEY,
  Customer_id INT,
  Order_date DATE,
  Total_amount FLOAT NOT NULL,
  FOREIGN KEY (customer_id) REFERENCES customers(customer_id)
);


INSERT INTO orders
(order_id, customer_id, order_date, total_amount) VALUES
(1001, 103, ‘2024-08-25’, 2500.00),
(1002, 101, ‘2024-08-27’, 3200.00),
(1003, 104, ‘2024-08-29’, 2700.00),
(1004, 102, ‘2024-08-31’, 2200.00),
(1005, 105, ‘2024-09-02’, 3000.00);


SELECT first_name, last_name, order_date, total_amount FROM customers INNER
JOIN orders ON customers.customer_id=orders.customer_id;
```

Output:-

first_name	last_name	order_date	total_amount
Sahil	Javiya	2024-08-25	2500.00
Pawan	Maurya	2024-08-27	3200.00
Sarang	Malve	2024-08-29	2700.00
Ayush	Sawant	2024-08-31	2200.00
Dev	Jaiswal	2024-09-02	3000.00

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.

Code:-

```
CREATE TABLE departments (
  Department_id INT PRIMARY KEY,
  Department_name VARCHAR(50) NOT NULL
);

INSERT INTO departments
(department_id, department_name) VALUES
(111, “Computer Science”),
(112, “Business”),
(113, “Engineering”),
(114, “Environmental Studies”),
(115, “Fine Arts”),
(116, “Social Sciences”),
(117, “Humanities”),
(118, “Health Sciences”);


CREATE TABLE employees (
  Employee_id INT PRIMARY KEY,
  First_name VARCHAR(50) NOT NULL,
  Last_name VARCHAR(50) NOT NULL,
  Department_id INT,
  FOREIGN KEY (department_id) REFERENCES departments(department_id)
);

INSERT INTO employees
(employee_id, first_name, last_name, department_id) VALUES
(1001, “Ayush”, “Sawant”, 114),
(1002, “Sarang”, “Malve”, 111),
(1003, “Sahil”, “Javiya”, 113),
(1004, “Dev”, “Jaiswal”, 112),
(1005, “Pawan”, “Maurya”, 115);

SELECT department_name, first_name, last_name FROM departments LEFT JOIN
employees ON departments.department_id=employees.department_id;
```

Output:-

department_name	first_name	last_name
Computer Science	Sarang	Malve
Business	Dev	Jaiswal
Engineering	Sahil	Javiya
Environmental Studies	Ayush	Sawant
Fine Arts	Pawan	Maurya
Social Sciences	NULL	NULL
Humanities	NULL	NULL
Health Sciences	NULL	NULL

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

Code:-

```
Import java.sql.Connection;
Import java.sql.DriverManager;
Import java.sql.SQLException;
Import java.sql.PreparedStatement;
Import java.sql.Statement;
Import java.sql.ResultSet;

Public class DatabaseConnection {
  Public static void main(String[] args)
  {
    Try {
      Class.forName(“com.mysql.cj.jdbc.Driver”);
      Connection conn =
DriverManager.getConnection(“jdbc:mysql://localhost:3306/lab8”, “pawan”,
“paw123”);
      System.out.println(“Connection established.”);

      Statement stmt = conn.createStatement();

      // Create table SQL
      String createTableSQL = “””
        CREATE TABLE customer (
          Cust_no INT PRIMARY KEY,
          Cust_name VARCHAR(50) NOT NULL,
          Cust_address VARCHAR(50) NOT NULL,
          Phone_no BIGINT NOT NULL,
          City VARCHAR(50) NOT NULL,
          Pincode INT NOT NULL,
          Country VARCHAR(50) NOT NULL
        )
      “””;
      Stmt.execute(createTableSQL);
      System.out.println(“Table created.”);

      // Insert records SQL
      String insertSQL = “””
        INSERT INTO customer (
          Cust_no, cust_name,
          Cust_address, phone_no, city,
          Pincode, country) VALUES
          (1, ‘Amit Sharma’, ‘3, 101 Nehru Street’, 9876543210, ‘Delhi’,
110001, ‘India’),
```

```
          (2, ‘Priya Gupta’, ‘3, 202, Mahatma Gandhi Road’, 9876543211,
‘Mumbai’, 400001, ‘India’),
          (3, ‘Rajesh Kumar’, ‘3, 303, Sardar Patel Nagar’, 9876543212,
‘Bengaluru’, 560001, ‘India’),
          (4, ‘Sneha Patel’, ‘3, 404, Mall Road’, 9876543213, ‘Shimla’,
171004, ‘India’),
          (5, ‘Vikram Singh’, ‘3, 505, Brigade Road’, 9876543214,
‘Chennai’, 600001, ‘India’);
      “””;
      Stmt.executeUpdate(insertSQL);
      System.out.println(“Records inserted successfully.”);

      // Delete record SQL
      String deleteSQL = “DELETE FROM customer WHERE cust_no = 5”;
      Stmt.executeUpdate(deleteSQL);
      System.out.println(“Record with cust_no = 5 deleted successfully.”);

      // Update records SQL
      String updateSQL = “UPDATE customer SET city = ‘Shillong’ WHERE city
= ‘Shimla’”;
      Stmt.executeUpdate(updateSQL);
      System.out.println(“Records updated successfully.”);

      // Select records SQL
      String selectSQL = “SELECT * FROM customer”;
      ResultSet rs = stmt.executeQuery(selectSQL);
      While (rs.next()) {
        System.out.println(“Customer no. : “ + rs.getInt(“cust_no”) + “,
Customer name: “ + rs.getString(“cust_name”) + “, Customer address: “ +
rs.getString(“cust_address”) + “, Phone no. : “ + rs.getLong(“phone_no”) +
“, City: “ + rs.getString(“city”) + “, Pincode: “ + rs.getInt(“pincode”) +
“, Country: “ + rs.getString(“country”));
      }

      Rs.close();
      Stmt.close();
      Conn.close();
    } catch (SQLException e) {
      System.out.println(“SQL exception occurred.”);
      e.printStackTrace();
    }
  }
}
```

Output:-

```
Connection established.
Table created.
Records inserted successfully.
Record with cust_no = 5 deleted successfully.
Records updated successfully.
Customer no. : 1, Customer name: Amit Sharma,
    Customer address: 3, 101 Nehru Street, Phone no.
    : 9876543210, City: Delhi, Pincode: 110001,
    Country: India
Customer no. : 2, Customer name: Priya Gupta,
    Customer address: 3, 202, Mahatma Gandhi Road,
    Phone no. : 9876543211, City: Mumbai, Pincode:
    400001, Country: India
Customer no. : 3, Customer name: Rajesh Kumar,
    Customer address: 3, 303, Sardar Patel Nagar,
    Phone no. : 9876543212, City: Bengaluru, Pincode:
    560001, Country: India
Customer no. : 4, Customer name: Sneha Patel,
    Customer address: 3, 404, Mall Road, Phone no. :
    9876543213, City: Shillong, Pincode: 171004,
    Country: India
```