GAM/IT/2022/F/0064 – P. K. D. H. Madushani

Lab Sheet : Java JDBC

1. Set Up MySQL Database

CREATE DATABASE employee_db;

USE employee_db;

CREATE TABLE employees (

id INT PRIMARY KEY AUTO_INCREMENT,

name VARCHAR(100),

position VARCHAR(100),

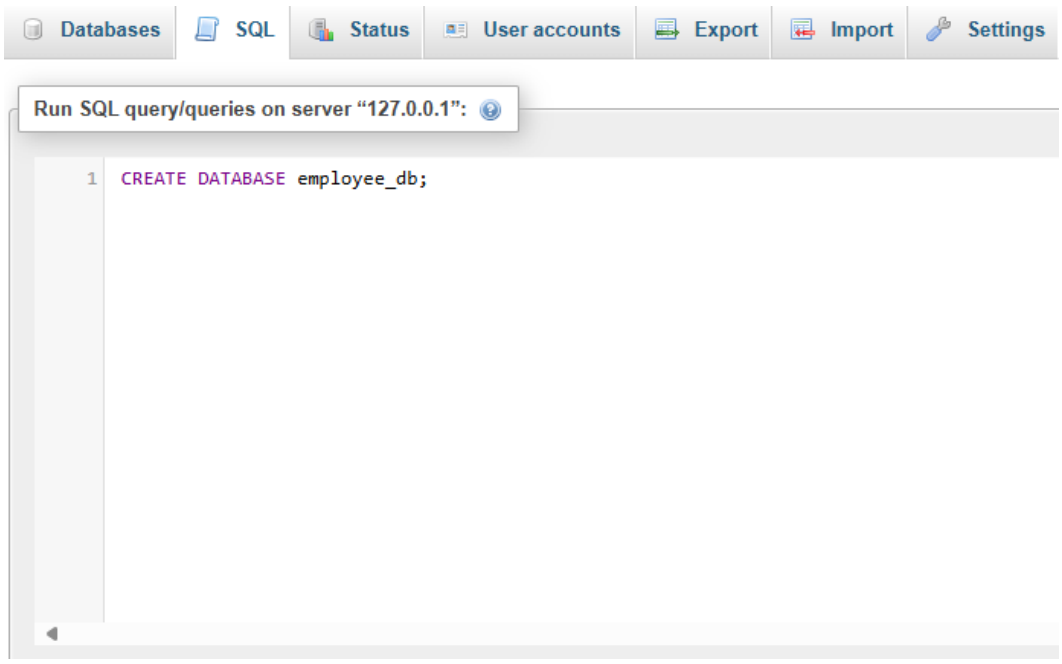
salary DECIMAL(10, 2));

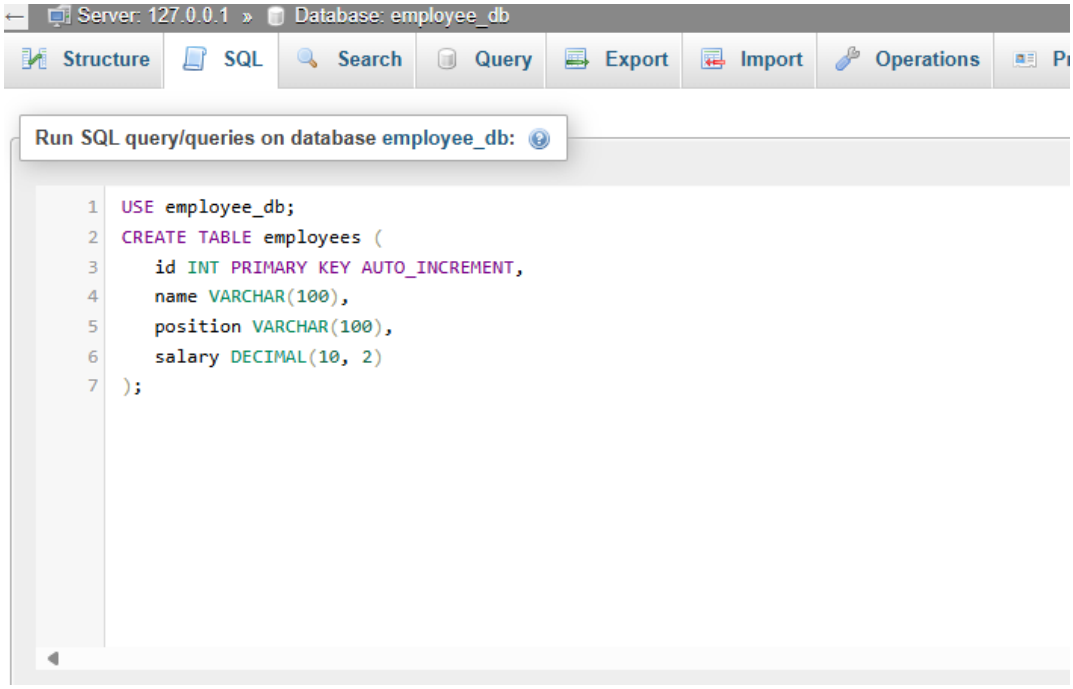
Insert some sample data

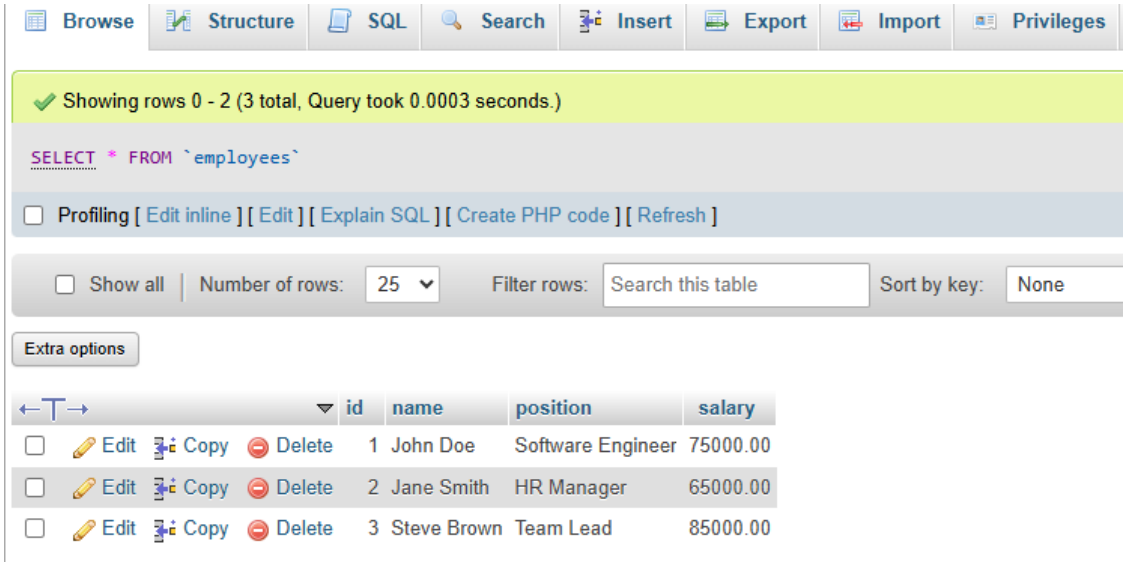
INSERT INTO employees (name, position, salary) VALUES ('John Doe', 'Software Engineer', 75000);

INSERT INTO employees (name, position, salary) VALUES ('Jane Smith', 'HR Manager', 65000);

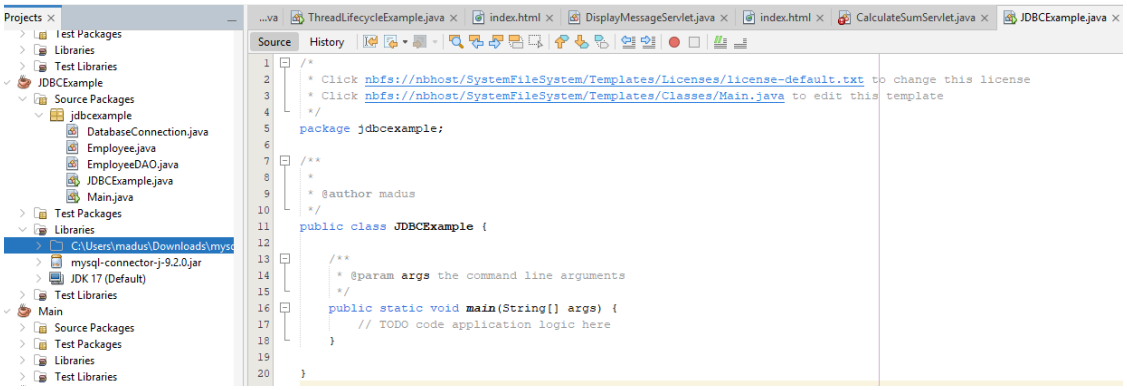
INSERT INTO employees (name, position, salary) VALUES ('Steve Brown', 'Team Lead', 85000);



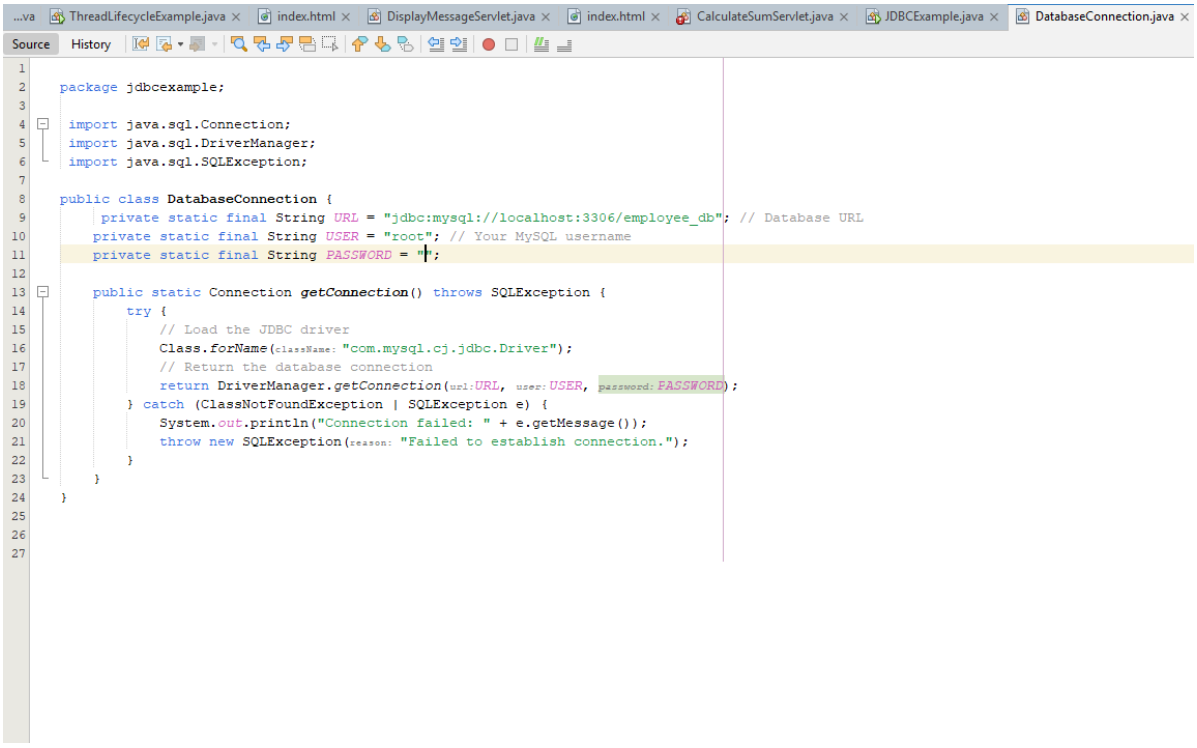

Server: 127.0.0.1 » Database: employee_db
Structure
SQL
Search
Query
Export
Import
Operations
Run SQL query/queries on database employee_db:
USE employee_db;
CREATE TABLE employees (
id INT PRIMARY KEY AUTO_INCREMENT,
name VARCHAR(100),
position VARCHAR(100),
salary DECIMAL(10, 2)
);


Browse
Structure
SQL
Search
Insert
Export
Import
Privileges
Showing rows 0 - 2 (3 total, Query took 0.0003 seconds.)
SELECT * FROM `employees`
Profiling [Edit inline] [Edit] [Explain SQL] [Create PHP code] [Refresh]
Show all
Number of rows: 25
Filter rows: Search this table
Sort by key: None
Extra options
id
name
position
salary
Edit Copy Delete 1 John Doe Software Engineer 75000.00
Edit Copy Delete 2 Jane Smith HR Manager 65000.00
Edit Copy Delete 3 Steve Brown Team Lead 85000.00

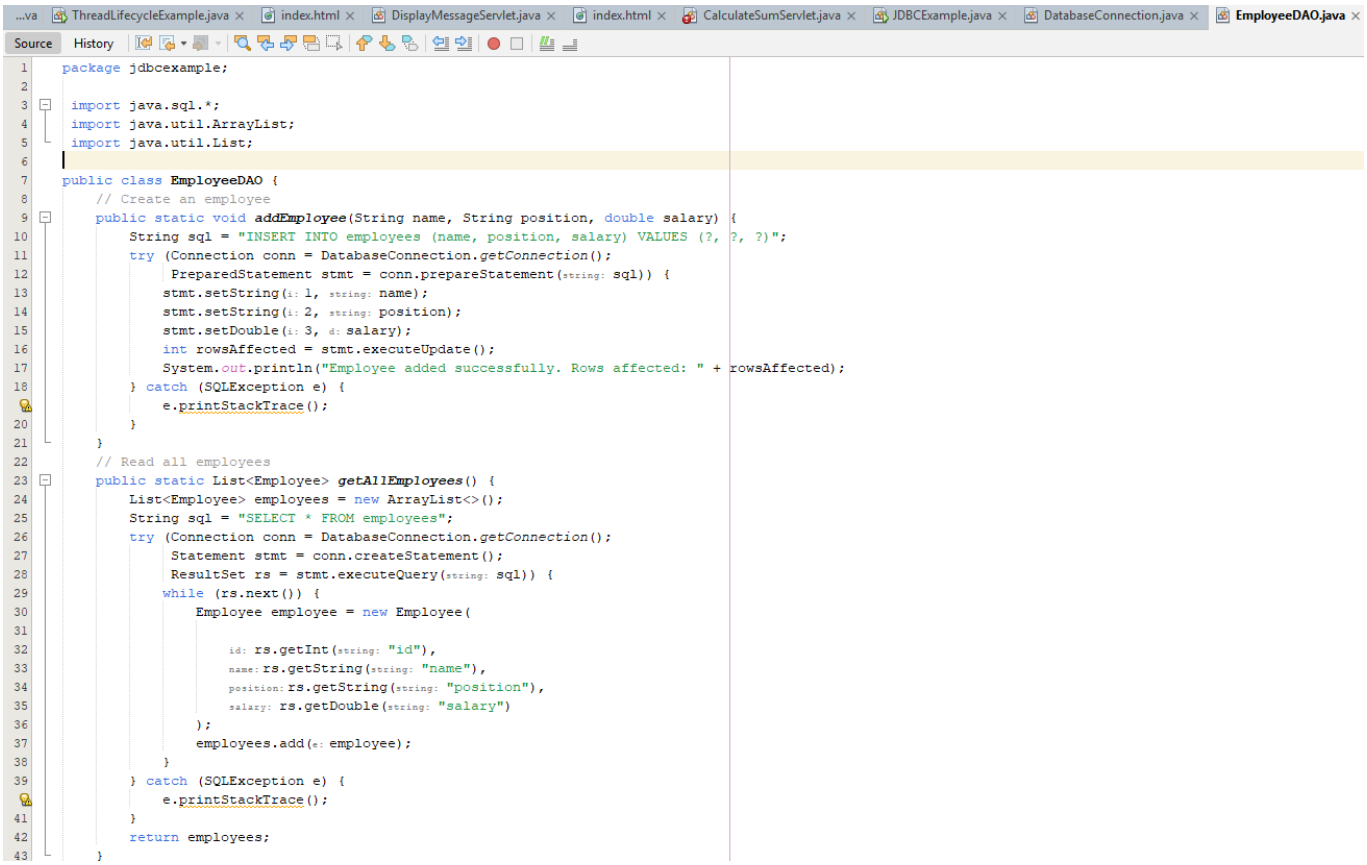
2. Set Up NetBeans Project



3. Establish JDBC Connection



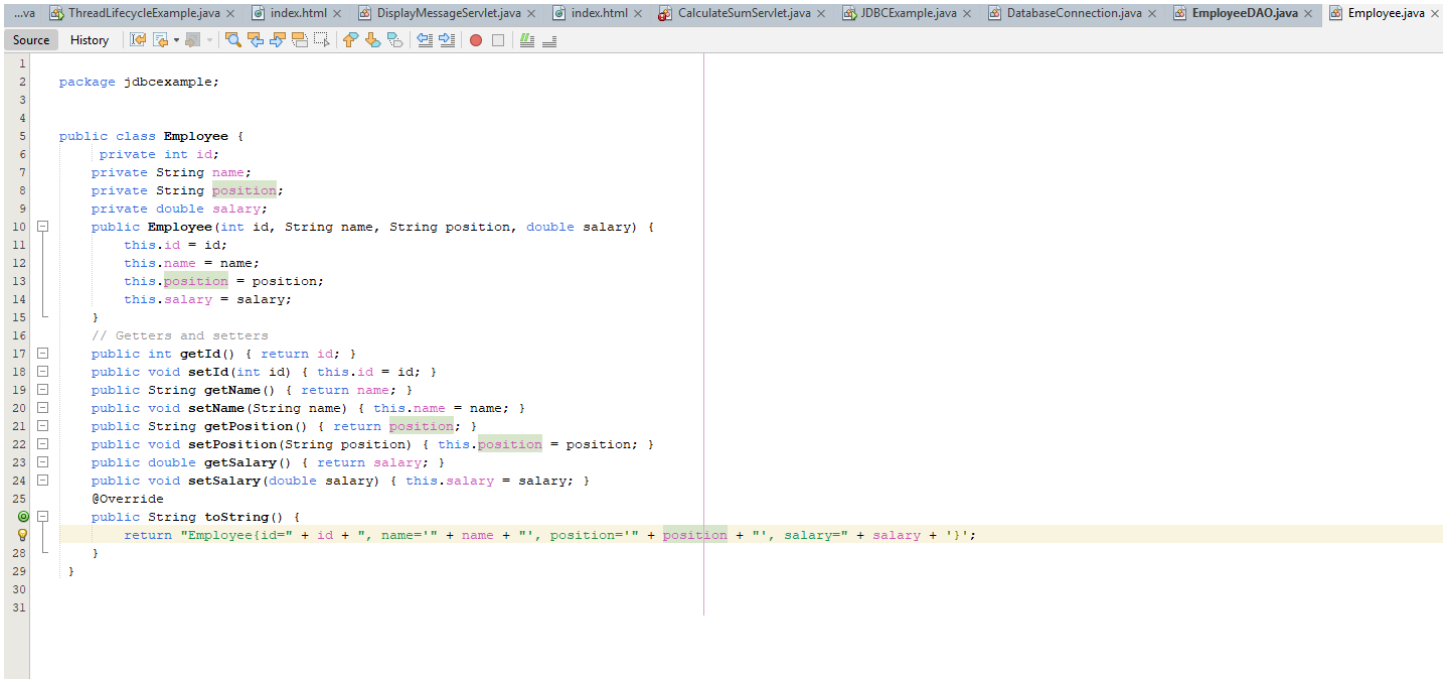
4. Perform CRUD Operations




```java
package jdbcexample;

import java.sql.*;
import java.util.ArrayList;
import java.util.List;

public class EmployeeDAO {
    // Create an employee
    public static void addEmployee(String name, String position, double salary) {
        String sql = "INSERT INTO employees (name, position, salary) VALUES (?, ?, ?)";
        try (Connection conn = DatabaseConnection.getConnection();
             PreparedStatement stmt = conn.prepareStatement(string: sql)) {
            stmt.setString(i: 1, string: name);
            stmt.setString(i: 2, string: position);
            stmt.setDouble(i: 3, d: salary);
            int rowsAffected = stmt.executeUpdate();
            System.out.println("Employee added successfully. Rows affected: " + rowsAffected);
        } catch (SQLException e) {
            e.printStackTrace();
        }
    }
    // Read all employees
    public static List<Employee> getAllEmployees() {
        List<Employee> employees = new ArrayList<>();
        String sql = "SELECT * FROM employees";
        try (Connection conn = DatabaseConnection.getConnection();
             Statement stmt = conn.createStatement();
             ResultSet rs = stmt.executeQuery(string: sql)) {
            while (rs.next()) {
                Employee employee = new Employee(

                    id: rs.getInt(string: "id"),
                    name: rs.getString(string: "name"),
                    position: rs.getString(string: "position"),
                    salary: rs.getDouble(string: "salary")
                );
                employees.add(e: employee);
            }
        } catch (SQLException e) {
            e.printStackTrace();
        }
        return employees;
    }
```

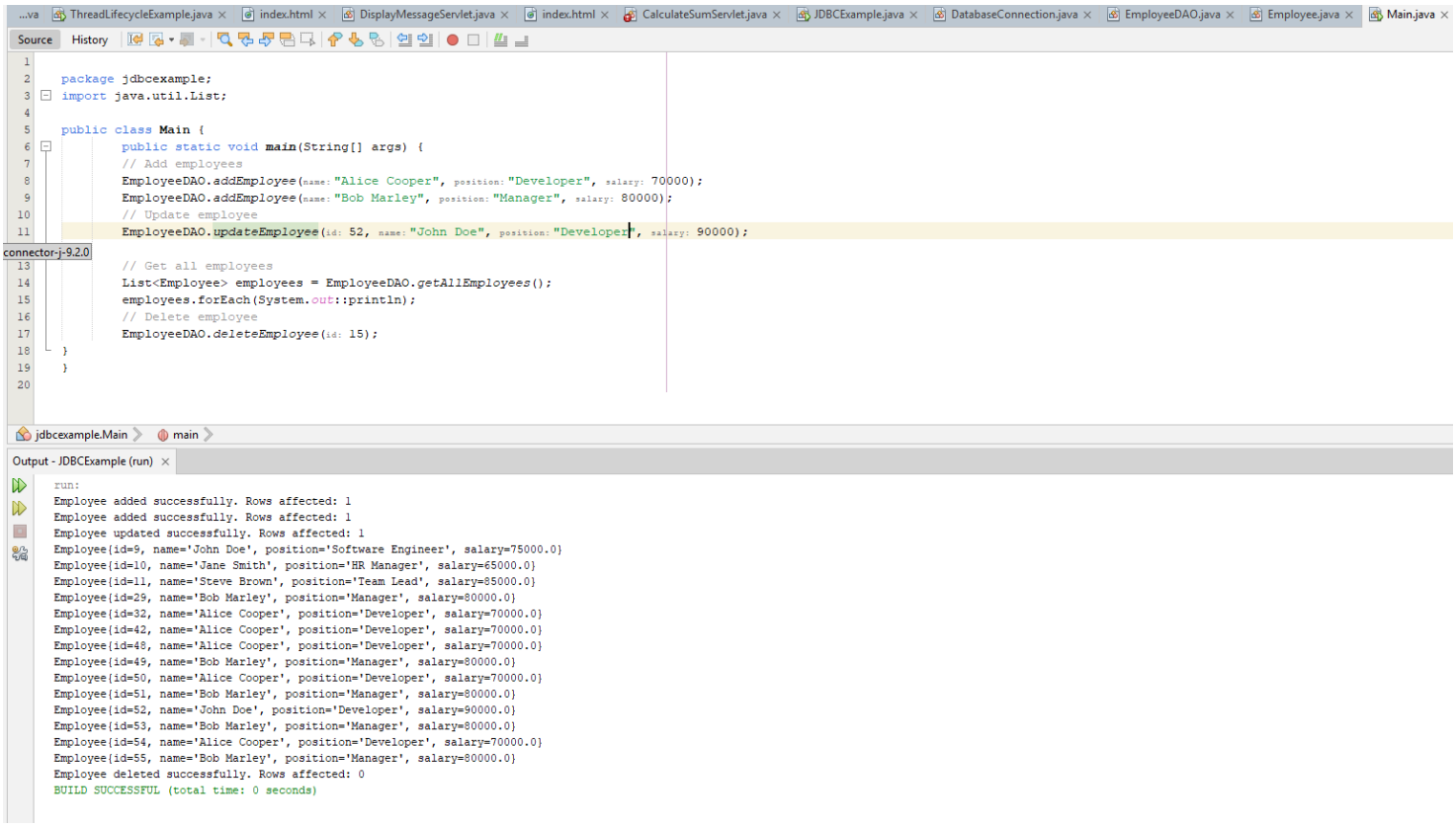
```java
    }
    // Update an employee's information
    public static void updateEmployee(int id, String name, String position, double salary) {
        String sql = "UPDATE employees SET name = ?, position = ?, salary = ? WHERE id = ?";
        try (Connection conn = DatabaseConnection.getConnection();
             PreparedStatement stmt = conn.prepareStatement(string: sql)) {
            stmt.setString(i: 1, string: name);
            stmt.setString(i: 2, string: position);
            stmt.setDouble(i: 3, d: salary);
            stmt.setInt(i: 4, i1: id);
            int rowsAffected = stmt.executeUpdate();
            System.out.println("Employee updated successfully. Rows affected: " + rowsAffected);
        } catch (SQLException e) {
            e.printStackTrace();
        }
    }
    // Delete an employee
    public static void deleteEmployee(int id) {
        String sql = "DELETE FROM employees WHERE id = ?";
        try (Connection conn = DatabaseConnection.getConnection();
             PreparedStatement stmt = conn.prepareStatement(string: sql)) {
            stmt.setInt(i: 1, i1: id);
            int rowsAffected = stmt.executeUpdate();
            System.out.println("Employee deleted successfully. Rows affected: " + rowsAffected);
        } catch (SQLException e) {
            e.printStackTrace();
        }
    }
}
```

5. Create Employee.java Class



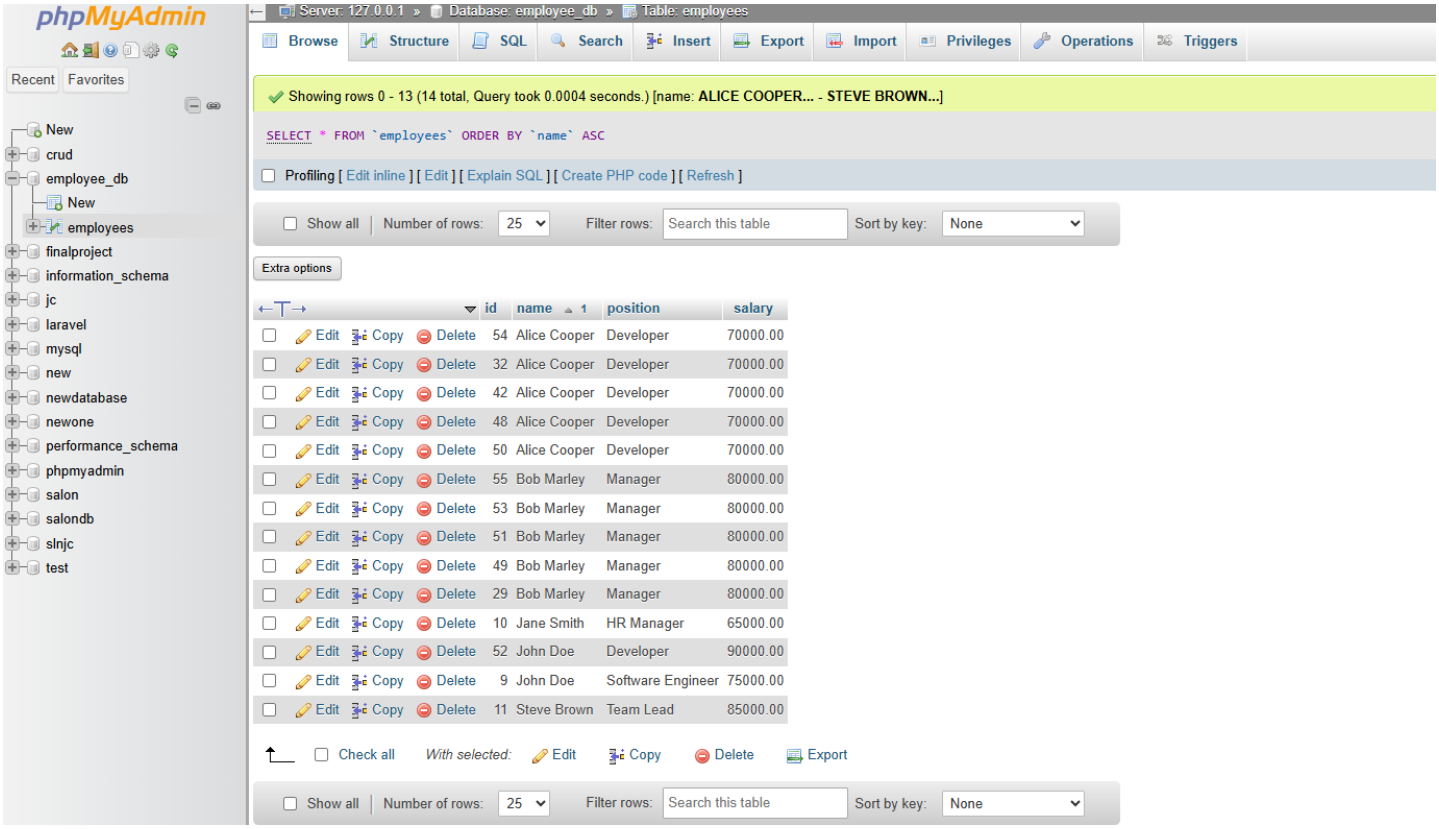
```java
package jdbcexample;


public class Employee {
    private int id;
    private String name;
    private String position;
    private double salary;
    public Employee(int id, String name, String position, double salary) {
        this.id = id;
        this.name = name;
        this.position = position;
        this.salary = salary;
    }
    // Getters and setters
    public int getId() { return id; }
    public void setId(int id) { this.id = id; }
    public String getName() { return name; }
    public void setName(String name) { this.name = name; }
    public String getPosition() { return position; }
    public void setPosition(String position) { this.position = position; }
    public double getSalary() { return salary; }
    public void setSalary(double salary) { this.salary = salary; }
    @Override
    public String toString() {
        return "Employee{id=" + id + ", name='" + name + "', position='" + position + "', salary=" + salary + '}';
    }
}
```

6. Test the Application



```java
package jdbcexample;
import java.util.List;

public class Main {
        public static void main(String[] args) {
        // Add employees
        EmployeeDAO.addEmployee(name: "Alice Cooper", position: "Developer", salary: 70000);
        EmployeeDAO.addEmployee(name: "Bob Marley", position: "Manager", salary: 80000);
        // Update employee
        EmployeeDAO.updateEmployee(id: 52, name: "John Doe", position: "Developer", salary: 90000);

        // Get all employees
        List<Employee> employees = EmployeeDAO.getAllEmployees();
        employees.forEach(System.out::println);
        // Delete employee
        EmployeeDAO.deleteEmployee(id: 15);
    }
}
```

```
run:
Employee added successfully. Rows affected: 1
Employee added successfully. Rows affected: 1
Employee updated successfully. Rows affected: 1
Employee{id=9, name='John Doe', position='Software Engineer', salary=75000.0}
Employee{id=10, name='Jane Smith', position='HR Manager', salary=65000.0}
Employee{id=11, name='Steve Brown', position='Team Lead', salary=85000.0}
Employee{id=29, name='Bob Marley', position='Manager', salary=80000.0}
Employee{id=32, name='Alice Cooper', position='Developer', salary=70000.0}
Employee{id=42, name='Alice Cooper', position='Developer', salary=70000.0}
Employee{id=48, name='Alice Cooper', position='Developer', salary=70000.0}
Employee{id=49, name='Bob Marley', position='Manager', salary=80000.0}
Employee{id=50, name='Alice Cooper', position='Developer', salary=70000.0}
Employee{id=51, name='Bob Marley', position='Manager', salary=80000.0}
Employee{id=52, name='John Doe', position='Developer', salary=90000.0}
Employee{id=53, name='Bob Marley', position='Manager', salary=80000.0}
Employee{id=54, name='Alice Cooper', position='Developer', salary=70000.0}
Employee{id=55, name='Bob Marley', position='Manager', salary=80000.0}
Employee deleted successfully. Rows affected: 0
BUILD SUCCESSFUL (total time: 0 seconds)
```


phpMyAdmin
Recent
Favorites
New
crud
employee_db
New
employees
finalproject
information_schema
jc
laravel
mysql
new
newdatabase
newone
performance_schema
phpmyadmin
salon
salondb
slnjc
test
Server: 127.0.0.1 » Database: employee_db » Table: employees
Browse
Structure
SQL
Search
Insert
Export
Import
Privileges
Operations
Triggers
Showing rows 0 - 13 (14 total, Query took 0.0004 seconds.) [name: ALICE COOPER... - STEVE BROWN...]
SELECT * FROM `employees` ORDER BY `name` ASC
Profiling [Edit inline] [Edit] [Explain SQL] [Create PHP code] [Refresh]
Show all
Number of rows: 25
Filter rows: Search this table
Sort by key: None
Extra options
id
name
position
salary
Edit Copy Delete 54 Alice Cooper Developer 70000.00
Edit Copy Delete 32 Alice Cooper Developer 70000.00
Edit Copy Delete 42 Alice Cooper Developer 70000.00
Edit Copy Delete 48 Alice Cooper Developer 70000.00
Edit Copy Delete 50 Alice Cooper Developer 70000.00
Edit Copy Delete 55 Bob Marley Manager 80000.00
Edit Copy Delete 53 Bob Marley Manager 80000.00
Edit Copy Delete 51 Bob Marley Manager 80000.00
Edit Copy Delete 49 Bob Marley Manager 80000.00
Edit Copy Delete 29 Bob Marley Manager 80000.00
Edit Copy Delete 10 Jane Smith HR Manager 65000.00
Edit Copy Delete 52 John Doe Developer 90000.00
Edit Copy Delete 9 John Doe Software Engineer 75000.00
Edit Copy Delete 11 Steve Brown Team Lead 85000.00
Check all
With selected:
Edit
Copy
Delete
Export
Show all
Number of rows: 25
Filter rows: Search this table
Sort by key: None