

```

import java.sql.CallableStatement;
import java.sql.Connection;
import java.sql.DriverManager;
import java.sql.PreparedStatement;
import java.sql.ResultSet;
import java.sql.SQLException;
import javax.swing.JLabel;
import javax.swing.JOptionPane;
import javax.swing.JPasswordField;
import javax.swing.JTextField;
import java.util.Scanner;

public class JDBC {

    //Owener: Chad Fox

    String jdbcUrl = "jdbc:postgresql://localhost:63333/fox00155";

    Connection conn;

    public Connection getDBConnection() throws SQLException{

        if(conn == null) {
            // Display a message to get the password from the user
            JLabel label = new JLabel("Postgres Username: ");
            JTextField jtf = new JTextField();
            JLabel label2 = new JLabel("Postgres Password:");
            JPasswordField jpf = new JPasswordField();
            JOptionPane.showConfirmDialog(null,
                new Object[]{label, jtf, label2, jpf},
                "Password:", JOptionPane.OK_CANCEL_OPTION);

            String password = String.valueOf(jpf.getPassword());
            conn = DriverManager.getConnection(jdbcUrl, jtf.getText(), password );
        }
        conn.setAutoCommit(true);
        return conn;
    }

    public static void main(String[] args) throws Exception{
        JDBC q = new JDBC();
    }
}

```

```
        System.out.println("There are two queries to pick from, please type 1 or 2 after  
picking the query. \nQuery 1: service appointment bill, listing for a given vehicle its VIN, make,  
model,\n" +
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        "year, owner name, and the list of all services performed during  
the appointment,\n" +
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        "along with the total cost of labor and parts. \nQuery 2: list of all  
vehicles serviced by a given mechanic in a given month\nEnter:");
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        Scanner reader = new Scanner(System.in);  
        int n = reader.nextInt();
```

```
        String appld = null;  
        String mechanic = null;  
        int month = 0;  
        int year = 0;
```

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        if(n == 1) {
```

```
            System.out.println("You have selected query 1, what is the ID of the  
appointment that you like to get information on?\nEnter:");
```

```
            appld = reader.next();  
            q.queryApp(appld);
```

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        }
```

```
        else if(n==2){
```

```
            System.out.println("You have selected query 2, enter the mechanic's  
name, then the month, and then the year\nEnter:");
```

```
            mechanic = reader.next();  
            month = reader.nextInt();  
            year = reader.nextInt();  
            q.servicedVehicles(mechanic, month, year);
```

```
        }
```

```
        else {
```

```
            System.out.println("invalid input");
```

```
        }
```

```
        reader.close();
```

```
    }
```

```
    public void queryApp(String appld)  
        throws SQLException {
```

```
        assert(appld != null);
```

```

// Connect to the database.
getDBConnection();

// Elaborate a string with the content of the query to insert a professor
String sqlQueryApp =
    "SELECT vehicle.VIN, vehicle.make, vehicle.model, vehicle.year,
owner.name, engine_diagnosis, oil_change, brake_repair, SUM(service.labor_hours *
mechanic.rate) + SUM(parts.cost) AS total_cost FROM appointment "
    + "NATURAL JOIN vehicle NATURAL JOIN owner NATURAL JOIN
service_type LEFT JOIN repairment ON appointment.app_ID = repairment.app_ID\n" +
    "LEFT JOIN service ON repairment.service_ID =
service.service_ID\n" +
    "LEFT JOIN mechanic ON service.mechanic = mechanic.name\n" +
    "LEFT JOIN service_parts ON service.service_ID =
service_parts.service_ID\n" +
    "LEFT JOIN parts ON service_parts.part_ID = parts.part_ID\n" +
    "WHERE appointment.app_ID = ?\n" +
    "GROUP BY vehicle.VIN, vehicle.make, vehicle.model, vehicle.year,
owner.name, engine_diagnosis, oil_change, brake_repair;";

```

```

try(PreparedStatement appointmentQuery =
    conn.prepareStatement(sqlQueryApp)){

    appointmentQuery.setString(1, appId);

    ResultSet rs = appointmentQuery.executeQuery();

while (rs.next()) {
    // Display results
    System.out.println("VIN: " + rs.getString("VIN"));
    System.out.println("Make: " + rs.getString("make"));
    System.out.println("Model: " + rs.getString("model"));
    System.out.println("Year: " + rs.getInt("year"));
    System.out.println("Owner Name: " + rs.getString("name"));
    System.out.println("Services Performed:");
    if (rs.getInt("engine_diagnosis") == 1) {
        System.out.println("- Engine Diagnosis");
    }
    if (rs.getInt("oil_change") == 1) {
        System.out.println("- Oil Change");
    }
}

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        if (rs.getInt("brake_repair") == 1) {
            System.out.println("- Brake Repair");
        }
        System.out.println("Total Cost: $" + rs.getDouble("total_cost"));
    }
    appointmentQuery.close();

    } catch (SQLException e) {
        System.out.println("An error occurred while retrieving the data: " + e.getMessage());
    }
    return;
}

public void servicedVehicles(String mechanic, int month, int year)
    throws SQLException {

    assert(mechanic != null);
    assert(month != 0);
    assert(year != 0);
    // Connect to the database.
    getDBConnection();

    String sqlVehicleService = "SELECT DISTINCT vehicle.VIN,
vehicle.make, vehicle.model, vehicle.year, mechanic.name "
        +"FROM appointment "
        +"JOIN vehicle ON appointment.VIN = vehicle.VIN
"
        +"JOIN repairment ON appointment.app_ID =
repairment.app_ID "
        +"JOIN service ON repairment.service_ID =
service.service_ID "
        +"JOIN mechanic ON service.mechanic =
mechanic.name "
        +"WHERE mechanic.name = ? "
        +"AND EXTRACT(MONTH FROM
appointment.date) = ? "
        +"AND EXTRACT(YEAR FROM appointment.date)
= ?; ";

    try(PreparedStatement mechanicQuery =
        conn.prepareStatement(sqlVehicleService)){

        mechanicQuery.setString(1, mechanic);

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        mechanicQuery.setInt(2, month);
        mechanicQuery.setInt(3, year);

        ResultSet rs = mechanicQuery.executeQuery();

        while (rs.next()) {
            // Display results
            System.out.println("VIN: " + rs.getString("VIN"));
            System.out.println("Make: " + rs.getString("make"));
            System.out.println("Model: " + rs.getString("model"));
            System.out.println("Year: " + rs.getInt("year"));
            System.out.println("Mechanic Name: " + rs.getString("name"));
        }

        mechanicQuery.close();

    } catch (SQLException e) {
        System.out.println("An error occurred while retrieving the data: " +
e.getMessage());
    }

    return;
}
}

```