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PRACTICE JDBC:

PART A: Connecting to MySQL and Fetching Data from a Table

```
import java.sql.*;

public class FetchEmployee {     public
static void main(String[] args) {
      String url = "jdbc:mysql://localhost:3306/yourDB"; // Replace yourDB with your database
name
      String username = "root"; // your DB username
      String password = "password"; // your DB password

      String query = "SELECT EmpID, Name, Salary FROM Employee";
       try
{
         // Load JDBC driver
         Class.forName("com.mysql.cj.jdbc.Driver");

         // Connect to database
         Connection con = DriverManager.getConnection(url, username, password);
Statement stmt = con.createStatement();

         // Execute query
         ResultSet rs = stmt.executeQuery(query);

         // Display results
while (rs.next()) {
            int empID = rs.getInt("EmpID");
String name = rs.getString("Name");
double salary = rs.getDouble("Salary");
            System.out.println(empID + " | " + name + " | " + salary);
         }
```

```
        // Close resources
rs.close();          stmt.close();
con.close();
      } catch (Exception e) {
e.printStackTrace();
      }
   }
}
```

Part B: CRUD Operations on Product Table Using JDBC

```
import java.sql.*; import
java.util.Scanner;

public class ProductCRUD {    private static final String URL =
"jdbc:mysql://localhost:3306/yourDB";    private static final String USER
= "root";    private static final String PASS = "password";

   public static void main(String[] args) {
      try (Connection con = DriverManager.getConnection(URL, USER, PASS);
Scanner sc = new Scanner(System.in)) {

         con.setAutoCommit(false); // Enable transaction

         while (true) {
            System.out.println("1. Add Product\n2. View Products\n3. Update Product\n4. Delete
Product\n5. Exit");
            System.out.print("Choose option: ");
int choice = sc.nextInt();              sc.nextLine();
// Consume newline

            switch (choice) {
case 1:
                  System.out.print("Enter ProductID: ");
int id = sc.nextInt();                  sc.nextLine();
                  System.out.print("Enter ProductName: ");
                  String name = sc.nextLine();
System.out.print("Enter Price: ");
double price = sc.nextDouble();
```

```
System.out.print("Enter Quantity: ");                    int
qty = sc.nextInt();

                String insertSQL = "INSERT INTO Product(ProductID, ProductName, Price,
Quantity) VALUES(?,?,?,?)";                    try (PreparedStatement ps =
con.prepareStatement(insertSQL)) {                    ps.setInt(1, id);
ps.setString(2, name);                    ps.setDouble(3, price);                    ps.setInt(4,
qty);                    ps.executeUpdate();                    con.commit();
                   System.out.println("Product added successfully!");
                } catch (SQLException e) {
con.rollback();
                   System.out.println("Error: " + e.getMessage());
                }
break;
             case
2:
                String selectSQL = "SELECT * FROM Product";
try (Statement stmt = con.createStatement(); ResultSet rs =
stmt.executeQuery(selectSQL)) {
                   while (rs.next()) {
                      System.out.println(rs.getInt("ProductID") + " | " +
rs.getString("ProductName") + " | " +
rs.getDouble("Price") + " | " +                    rs.getInt("Quantity"));
                   }
}
break;
             case
3:
                System.out.print("Enter ProductID to update: ");
int updateId = sc.nextInt();                    sc.nextLine();
                System.out.print("Enter new ProductName: ");
                String newName = sc.nextLine();
                System.out.print("Enter new Price: ");
double newPrice = sc.nextDouble();
System.out.print("Enter new Quantity: ");                    int
newQty = sc.nextInt();

                String updateSQL = "UPDATE Product SET ProductName=?, Price=?, Quantity=?
WHERE ProductID=?";
                try (PreparedStatement ps = con.prepareStatement(updateSQL)) {
ps.setString(1, newName);                    ps.setDouble(2, newPrice);
ps.setInt(3, newQty);                    ps.setInt(4, updateId);
ps.executeUpdate();                    con.commit();
```

```
                    System.out.println("Product updated!");
                } catch (SQLException e) {
con.rollback();
                    System.out.println("Error: " + e.getMessage());
                }
break;
            case
4:
                System.out.print("Enter ProductID to delete: ");
int delId = sc.nextInt();
                String deleteSQL = "DELETE FROM Product WHERE ProductID=?";
try (PreparedStatement ps = con.prepareStatement(deleteSQL)) {
ps.setInt(1, delId);                    ps.executeUpdate();
con.commit();
                    System.out.println("Product deleted!");
                } catch (SQLException e) {
con.rollback();
                    System.out.println("Error: " + e.getMessage());
                }
break;
            case 5:
return;
            }
        }

    } catch (SQLException e) {
e.printStackTrace();
    }
  }
}
```

Part C: Student Management Application Using JDBC and MVC

Model (Student.java) public class Student { private int studentID; private String name; private String department; private double marks;

```
   // Constructor     public Student(int studentID, String name, String
department, double marks) {         this.studentID = studentID;         this.name =
name;         this.department = department;         this.marks = marks;
   }

   // Getters and Setters     public int getStudentID() {
return studentID; }     public String getName() { return
name; }     public String getDepartment() { return
department; }     public double getMarks() { return
marks; }

   public void setName(String name) { this.name = name; }     public void
setDepartment(String department) { this.department = department; }     public void
setMarks(double marks) { this.marks = marks; }
}
```

Controller (StudentController.java)

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

public class StudentController {
private Connection con;

   public StudentController() throws SQLException {
String url = "jdbc:mysql://localhost:3306/yourDB";
      String user = "root";         String pass = "password";
con = DriverManager.getConnection(url, user, pass);
   }

   public void addStudent(Student s) throws SQLException {
      String sql = "INSERT INTO Student(StudentID, Name, Department, Marks)
VALUES(?,?,?,?)";         try (PreparedStatement ps = con.prepareStatement(sql))
{            ps.setInt(1, s.getStudentID());            ps.setString(2, s.getName());
ps.setString(3, s.getDepartment());            ps.setDouble(4, s.getMarks());
ps.executeUpdate();
      }
   }

   public List<Student> getAllStudents() throws SQLException {
      List<Student> list = new ArrayList<>();         String sql = "SELECT * FROM
Student";         try (Statement stmt = con.createStatement(); ResultSet rs =
```

```
stmt.executeQuery(sql)) {          while (rs.next()) {              list.add(new
Student(rs.getInt("StudentID"),                                  rs.getString("Name"),
rs.getString("Department"),                                  rs.getDouble("Marks")));
        }
}       return
list;
   }

   public void updateStudent(Student s) throws SQLException {
      String sql = "UPDATE Student SET Name=?, Department=?, Marks=? WHERE
StudentID=?";       try (PreparedStatement ps = con.prepareStatement(sql)) {
ps.setString(1, s.getName());
         ps.setString(2, s.getDepartment());
ps.setDouble(3, s.getMarks());          ps.setInt(4,
s.getStudentID());          ps.executeUpdate();
      }
   }

   public void deleteStudent(int studentID) throws SQLException {
String sql = "DELETE FROM Student WHERE StudentID=?";
try (PreparedStatement ps = con.prepareStatement(sql)) {
ps.setInt(1, studentID);          ps.executeUpdate();
      }
   }
}
```

View (StudentView.java)

```
import java.util.List; import
java.util.Scanner;

public class StudentView {
   public static void main(String[] args) throws Exception {
      StudentController controller = new StudentController();
      Scanner sc = new Scanner(System.in);

      while (true) {
         System.out.println("1.Add Student 2.View Students 3.Update Student 4.Delete Student
5.Exit");          int choice =
sc.nextInt();
sc.nextLine();
```

```
            switch (choice) {
case 1:
                    System.out.print("ID: ");
int id = sc.nextInt(); sc.nextLine();
                    System.out.print("Name: ");
                    String name = sc.nextLine();
                    System.out.print("Department: ");
                    String dept = sc.nextLine();
                    System.out.print("Marks: ");
                    double marks = sc.nextDouble();
controller.addStudent(new Student(id, name, dept, marks));
break;                  case 2:
                    List<Student> list = controller.getAllStudents();
for (Student s : list) {
                       System.out.println(s.getStudentID() + " | " + s.getName() + " | " +
s.getDepartment() + " | " + s.getMarks());                      }                      break;
case 3:
                    System.out.print("ID to Update: ");
int upId = sc.nextInt(); sc.nextLine();
                    System.out.print("New Name: ");
                    String upName = sc.nextLine();
                    System.out.print("New Dept: ");
                    String upDept = sc.nextLine();                      System.out.print("New
Marks: ");                      double upMarks = sc.nextDouble();
controller.updateStudent(new Student(upId, upName, upDept, upMarks));
break;                  case 4:
                    System.out.print("ID to Delete: ");
int delId = sc.nextInt();
controller.deleteStudent(delId);
break;                  case 5:                      return;
            }
        }
    }
}
```