



# DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

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## EXPERIMENT- 7

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**Section/Group:** 22BCS\_IOT-639-B

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**Subject Name:** Project Based Learning in Java

**Subject Code:** 22CSH-359

### EASYLEVEL

- Aim:** Create a Java program to connect to a MySQL database and fetch data from a single table.
- Objective:** To retrieve and display all records from a table named Employee with columns EmpID, Name, and Salary.

### **3. Implementation/Code:**

```
package Project1; import java.sql.*; public
class Easy7JDBC {    public static void
main(String[] args) {
    // Database connection details
    String url = "jdbc:mysql://localhost:3306/shivanidb";
    String username = "root";
    String password = "Shivani@1234";
    // SQL Query
    String query = "SELECT * FROM Employee";          try (Connection
conn = DriverManager.getConnection(url, username, password);
    Statement stmt = conn.createStatement();
    ResultSet rs = stmt.executeQuery(query)) {
        System.out.println("Connected to shivanidb successfully!\n");
        System.out.println("EmpID | Name | Salary");           while (rs.next())
    {
        System.out.printf("%d | %s | %.2f\n",
        rs.getInt("EmpID"), rs.getString("Name"), rs.getDouble("Salary")));
    } catch (SQLException e) {
        System.err.println("Connection failed: " + e.getMessage());
    }
}}
```

### **4. Output:**



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```
"C:\Program Files\Java\jdk-20\bin\java.exe" "-javaagent:C:\Program Files\JetBrains\IntelliJ IDEA 2023.2.1\lib\idea_rt.jar" -Dfile.encoding=UTF-8 com.intellij.rt.execution.junit.JUnitStarter -idePath=C:\Program Files\JetBrains\IntelliJ IDEA 2023.2.1 "C:\Users\Shivani\IdeaProjects\Medium7JDBC\src\main\java\com\javatpoint\Medium7JDBC.java"
Connected to shivanidb successfully!
+----+----+----+
| EmpID | Name | Salary |
+----+----+----+
| 16676 | Shivani Singh | 50000.00 |
| 16677 | Vishal Saroha | 60000.00 |
| 16678 | Nisha | 55000.00 |
+----+----+----+
Process finished with exit code 0
```

## MEDIUM LEVEL

- 1. Aim:** Build a program to perform CRUD operations
- 2. Objective:** To perform Create, Read, Update, Delete on a database table Product with columns: ProductID, ProductName, Price, and Quantity. The program should include menu-driven options for each operation.
- 3. Implementation/Code:**

```
package Project1; import java.sql.*; import java.util.Scanner; public class Medium7JDBC { public static void main(String[] args) { String url = "jdbc:mysql://localhost:3306/shivanidb"; String user = "root"; String password = "Shivani@1234"; Scanner sc = new Scanner(System.in); try (Connection conn = DriverManager.getConnection(url, user, password)) { while (true) { System.out.println("\n1. Add Product 2. View Products 3. Update Price 4. Delete Product 5. Exit"); int choice = sc.nextInt(); if (choice == 1) addProduct(conn, sc); else if (choice == 2) viewProducts(conn); else if (choice == 3) updateProduct(conn, sc); else if (choice == 4) deleteProduct(conn, sc); break; else System.out.println("Invalid choice."); } catch (SQLException e) { e.printStackTrace(); } } static void addProduct(Connection conn, Scanner sc) throws SQLException { System.out.print("Enter Product Name: "); sc.nextLine(); String name = sc.nextLine();
```



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```
System.out.print("Enter Price: ");           double
price = sc.nextDouble();
System.out.print("Enter Quantity: ");          int
quantity = sc.nextInt();
PreparedStatement stmt = conn.prepareStatement("INSERT INTO
Product (ProductName, Price, Quantity) VALUES (?, ?, ?)");
stmt.setString(1, name);  stmt.setDouble(2, price);  stmt.setInt(3,
quantity);  stmt.executeUpdate();
System.out.println("Product added.");
}
static void viewProducts(Connection conn) throws SQLException {
    ResultSet rs = conn.createStatement().executeQuery("SELECT * FROM
Product");
    System.out.println("\nProductID | Product Name | Price | Quantity");
    while
        (rs.next()) {
            System.out.printf("%d | %s | %.2f | %d\n", rs.getInt(1),
rs.getString(2), rs.getDouble(3), rs.getInt(4));
        }
    } static void updateProduct(Connection conn, Scanner sc)
throws
SQLException {
    System.out.print("Enter ProductID to update: ");
int id = sc.nextInt();
    System.out.print("Enter new Price: ");
double price = sc.nextDouble();
    PreparedStatement stmt = conn.prepareStatement("UPDATE Product
SET Price=? WHERE ProductID=?");stmt.setDouble(1, price);  stmt.setInt(2,
id);  stmt.executeUpdate();  System.out.println("Product updated.");
}
static void deleteProduct(Connection conn, Scanner sc) throws
SQLException {
    System.out.print("Enter ProductID to delete: ");
int id = sc.nextInt();
    PreparedStatement stmt = conn.prepareStatement("DELETE FROM Product
WHERE ProductID=?");stmt.setInt(1, id);  stmt.executeUpdate();
    System.out.println("Product deleted.");
}}
```

## 4. Output:



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```
Medium7IDBC <
"C:\Program Files\Java\jdk-20\bin\java.exe" "-javaagent:C:\Program Files\JetBrains\

1. Add Product 2. View Products 3. Update Price 4. Delete Product 5. Exit
2

ProductID | Product Name | Price | Quantity
1 | Laptop | 66000.00 | 7
2 | Mobile | 45000.00 | 30
3 | Sunscreen | 999.00 | 34

1. Add Product 2. View Products 3. Update Price 4. Delete Product 5. Exit
1
Enter Product Name: Washing Machine
Enter Price: 100000
Enter Quantity: 5
Product added.

1. Add Product 2. View Products 3. Update Price 4. Delete Product 5. Exit
5
```

## HARD LEVEL

- 1. Aim:** Develop a Java application using JDBC and MVC architecture to manage student data.
- 2. Objective:** To Use a Student class as the model with fields like StudentID, Name, Department, and Marks. Include a database table to store student data.

- 3. Implementation/Code:**

```
package Project1;
import java.sql.SQLException;
import java.util.List; import
java.util.Scanner;

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

    while (true) {
        System.out.println("\n1. Add Student 2. View Students
```



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```
3. Update Marks 4. Delete Student 5. Exit");

        int choice = sc.nextInt(); if

        (choice == 1) {

            System.out.print("Enter Name: ");
            sc.nextLine();
            String name = sc.nextLine();
            System.out.print("Enter Department: ");
            String dept = sc.nextLine();
            System.out.print("Enter Marks: ");    double marks = sc.nextDouble();
            controller.addStudent(new
            Studentss(0, name, dept, marks)); } else if (choice
            == 2) {
                List<Studentss> students = controller.getStudents();
                System.out.println("\nStudentID | Name | Department |
Marks");
                System.out.println("-----");
                for (Studentss s : students) {
                    System.out.printf("%d | %s | %s | %.2f\n",
s.getStudentID(), s.getName(), s.getDepartment(), s.getMarks());
                }
            }
            else if (choice == 3) {
                System.out.print("Enter StudentID to update: ");
                int id = sc.nextInt();
                System.out.print("Enter new Marks: ");
                double marks = sc.nextDouble();
                controller.updateStudentMarks(id, marks);
            }
            else if (choice == 4) {
                System.out.print("Enter StudentID to delete: ");
                int id = sc.nextInt(); controller.deleteStudent(id);
            }
            else if (choice == 5) {
                System.out.println("Exiting..."); }
            else {
                System.out.println("Invalid choice.");
            }
        }
    }
} catch (SQLException e) {
    e.printStackTrace();
}
}
```

## 4. Output:



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```
StudentView.x
↑ "C:\Program Files\Java\jdk-20\bin\java.exe" "-javaagent:C:\Program Files\JetBrain
↓
1. Add Student 2. View Students 3. Update Marks 4. Delete Student 5. Exit
1
Enter Name: Shivani Singh
Enter Department: Computer Science
Enter Marks: 95.7
Student added successfully.

1. Add Student 2. View Students 3. Update Marks 4. Delete Student 5. Exit
2

StudentID | Name | Department | Marks
-----
1 | Shivani Singh | Computer Science | 95.70

1. Add Student 2. View Students 3. Update Marks 4. Delete Student 5. Exit
5
Exiting...

Process finished with exit code 0
```

## 5. Learning Outcomes:

- (i) Learn how to **establish a connection** between a Java application and a MySQL database using **JDBC**.
- (ii) Understand the use of **DriverManager** and **Connection** objects to interact with the database.
- (iii) Learn to use **PreparedStatement** to securely execute SQL queries.