



DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

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Experiment - 7

Student Name: Priyanshu Choudhary

UID: 23BCS12648

Branch: BE-CSE

Section/Group: KRG-2B

Semester: 5th

Date of Performance: 15/10/25

Subject Name: Project Based Learning in Java

Subject Code: 23CSH-304

Aim:

To build a Java program that performs CRUD (Create, Read, Update, Delete) operations on a Product table using JDBC with transaction handling.

Objective:

To learn how to implement CRUD operations using JDBC, apply transaction handling, and use a menu-driven program for database operations.

Apparatus / Input Used:

- Java (JDK 8 or above)
- MySQL Database
- JDBC API
- MySQL Table: **Product(ProductID, ProductName, Price, Quantity)**
- IDE: Eclipse / IntelliJ / VS Code

Procedure:

1. Create a MySQL table **Product(ProductID, ProductName, Price, Quantity)**
2. Load the MySQL JDBC Driver using `Class.forName()`
3. Establish a connection using `DriverManager.getConnection()`
4. Create a menu-driven program with options: Add, View, Update, Delete
5. Use **PreparedStatement** for secure queries
6. Use `connection.setAutoCommit(false)` for manual transaction mode
7. Use `commit()` on successful operations
8. Use `rollback()` on errors
9. Close all JDBC resources properly (Connection, Statement, ResultSet)

Program Code:

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

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

    try
        { Class.forName("com.mysql.cj.jdbc.Driver");
        Connection con = DriverManager.getConnection(
        "jdbc:mysql://localhost:3306/testdb", "root", "password"
        );

        con.setAutoCommit(false);
        int choice;

        while (true) {
            System.out.println("\n--- Product Management Menu ---");
            System.out.println("1. Add Product");
            System.out.println("2. View All Products");
            System.out.println("3. Update Product");
            System.out.println("4. Delete Product");
            System.out.println("5. Exit");
            System.out.print("Enter choice: ");
            choice = sc.nextInt();

            if (choice == 1) {
                PreparedStatement ps =
                    con.prepareStatement( "INSERT INTO
                    Product VALUES (?, ?, ?, ?)"
                );
                System.out.print("Enter Product ID: ");
                ps.setInt(1, sc.nextInt());
                System.out.print("Enter Product Name: ");
```

```

        ps.setString(2, sc.next());
        System.out.print("Enter Price: ");
        ps.setDouble(3, sc.nextDouble());
        System.out.print("Enter Quantity: ");
        ps.setInt(4, sc.nextInt());
        ps.executeUpdate();
        con.commit();
        System.out.println("Product Added Successfully!");
    }
    else if (choice == 2) {
        Statement st = con.createStatement();
        ResultSet rs = st.executeQuery("SELECT * FROM
        Product"); while (rs.next()) {
            System.out.println(rs.getInt(1) + " | "
            + rs.getString(2) + " | " + rs.getDouble(3)
            + " | " + rs.getInt(4));
        }
    }
    else if (choice == 3) {
        PreparedStatement ps = con.prepareStatement(
            "UPDATE Product SET Price=?, Quantity=? WHERE
            ProductID=?"
        );
        System.out.print("Enter Product ID: ");
        ps.setInt(3, sc.nextInt());
        System.out.print("Enter New Price: ");
        ps.setDouble(1, sc.nextDouble());
        System.out.print("Enter New Quantity: ");
        ps.setInt(2, sc.nextInt());
        ps.executeUpdate();
        con.commit();
        System.out.println("Product Updated Successfully!");
    }
    else if (choice == 4) {
        PreparedStatement ps =
            con.prepareStatement( "DELETE FROM
            Product WHERE ProductID=?"
        );
    }

```

```

        System.out.print("Enter Product ID: ");
        ps.setInt(1, sc.nextInt());
        ps.executeUpdate();
        con.commit();
        System.out.println("Product Deleted Successfully!");
    }
    else if (choice == 5)
    { System.out.println("Exiting.."); break;
    }
    else {
        System.out.println("Invalid Choice");
    }
}
con.close();
} catch (Exception e)
{ System.out.println("Error! Rolling Back...");
}
}
}

```

Sample Output:

--- Product Management Menu ---

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

Enter choice: 1

Enter Product ID: 101

Enter Product Name: Pen

Enter Price: 10

Enter Quantity: 100

Product Added Successfully!

Enter choice: 2

101 | Pen | 10.0 | 100