



Experiment - 7

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Subject Name: Project Based Learning in Java

Subject Code: 23CSH-304

1.Aim:

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

2.Objective:

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

3.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



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8. Use rollback() on errors

9. Close all JDBC resources properly (Connection, Statement, ResultSet)

4. 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");
```



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```
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));
```



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```
    }

    } 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;
```



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```
        }
        e
        l
        s
        e
        {
            System.out.println("Invalid Choice");
        }
    }
    con.close();
} catch (Exception e)
{
    System.out.println("Error! Rolling Back...");
}
}
}
```

5. 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



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Enter Price: 10

Enter Quantity: 100

Product Added Successfully!

Enter choice: 2

101 | Pen | 10.0 | 100