



# DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

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## Experiment - 7

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**Branch:** BE-CSE

**Semester:** 5<sup>th</sup>

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

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**Section/Group:** KRG-2B

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### 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

### 4. 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)

### 5. Program Code:

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

```

public class Main {
    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) + " | "
                        );
                    }
                }
            }
        } catch (Exception e) {
            e.printStackTrace();
        }
    }
}

```

```

        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: Laptop

Enter Price: 999.99

Enter Quantity: 10

Product Added Successfully!

--- Product Management Menu ---

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

Enter choice: 2

101 | Laptop | 999.99 | 10