**Day-12 Basics of Java**

Problem Statement 1: Build Command-Line Product Management

Application

**package** com.mphasis.dbutil;

**import** java.sql.Connection;

**import** java.sql.DriverManager;

**import** java.sql.SQLException;

**public** **class** DbUtil {

**private** **static** Connection *connection* = **null**;

**public** **static** Connection createConnection() **throws** ClassNotFoundException,

  SQLException {

    String url,userId, password;

    url =  "jdbc:mysql://@localhost:3306/productdb";

    userId = "root";

    password = "sowmya";

    Class.*forName*("com.mysql.cj.jdbc.Driver");

*connection* = DriverManager.*getConnection*(url, userId, password);

**return** *connection*;

    }

**public** **static** **void** closeConnection() **throws** SQLException {

*connection*.close();

  }

}

//Domain

**package** com.mphasis.domain;

**public** **class** Product {

**int** product\_id;

  String product\_name;

**float** product\_price;

**public** Product() {

  }

**public** **int** getProduct\_id() {

**return** product\_id;

  }

**public** **void** setProduct\_id(**int** product\_id) {

**this**.product\_id = product\_id;

  }

**public** String getProduct\_name() {

**return** product\_name;

  }

**public** **void** setProduct\_name(String product\_name) {

**this**.product\_name = product\_name;

  }

**public** **float** getProduct\_price() {

**return** product\_price;

  }

**public** **void** setProduct\_price(**float** product\_price) {

**this**.product\_price = product\_price;

  }

}

//DAO

**package** com.mphasis.dao;

**import** java.sql.Connection;

**import** java.sql.PreparedStatement;

**import** java.sql.ResultSet;

**import** java.sql.SQLException;

**import** java.util.ArrayList;

**import** java.util.List;

**import** java.util.Scanner;

**import** com.mphasis.dbutil.DbUtil;

**import** com.mphasis.domain.Product;

**public** **class** ProductManagementDAO {

**private** Connection connection = **null**;

**private** PreparedStatement pstmt = **null**;

**private** ResultSet rset = **null**;

  ArrayList<Product> productList = **null**;

**public** **void** viewProducts() **throws** ClassNotFoundException, SQLException {

String query = "SELECT \* FROM product";

**try** {

  connection = DbUtil.*createConnection*();

  pstmt = connection.prepareStatement(query);

  rset = pstmt.executeQuery();

**while** (rset.next()) {

System.***out***.println("Product ID: " + rset.getInt("product\_id"));

System.***out***.println("Product Name: " + rset.getString("product\_name"));

System.***out***.println("Product Price: " + rset.getFloat("product\_price"));

System.***out***.println();

}

} **catch** (SQLException e) {

System.***out***.println("Error viewing products: " + e.getMessage());

}**finally** {

  DbUtil.*closeConnection*();

}

}

**public** **void** addProduct() **throws** ClassNotFoundException, SQLException {

Scanner scanner = **new** Scanner(System.***in***);

System.***out***.println("Enter product id: ");

**int** productId = scanner.nextInt();

scanner.nextLine();

System.***out***.println("Enter product name: ");

String productName = scanner.nextLine();

System.***out***.println("Enter product price: ");

**float** productPrice = scanner.nextFloat();

scanner.nextLine();

String query = "INSERT INTO product VALUES (?, ?, ?)";

**try** {

  connection = DbUtil.*createConnection*();

  pstmt = connection.prepareStatement(query);

  pstmt.setInt(1, productId);

pstmt.setString(2, productName);

pstmt.setFloat(3, productPrice);

pstmt.executeUpdate();

System.***out***.println("Product added successfully.");

} **catch** (SQLException e) {

System.***out***.println("Error adding product: " + e.getMessage());

}**finally** {

  DbUtil.*closeConnection*();

}

}

**public** **void** updateProduct() **throws** ClassNotFoundException, SQLException {

Scanner scanner = **new** Scanner(System.***in***);

System.***out***.println("Enter product ID: ");

**int** productID = scanner.nextInt();

scanner.nextLine();

System.***out***.println("Enter new product name: ");

String productName = scanner.nextLine();

System.***out***.println("Enter new product price: ");

**float** productPrice = scanner.nextFloat();

scanner.nextLine();

String query = "UPDATE product SET product\_name = ?, product\_price = ? WHERE product\_id = ?";

**try** {

  connection = DbUtil.*createConnection*();

  pstmt = connection.prepareStatement(query);

pstmt.setString(1, productName);

pstmt.setFloat(2, productPrice);

pstmt.setInt(3, productID);

pstmt.executeUpdate();

System.***out***.println("Product updated successfully.");

} **catch** (SQLException e) {

System.***out***.println("Error updating product: " + e.getMessage());

}**finally** {

  DbUtil.*closeConnection*();

}

}

**public** **void** deleteProduct() **throws** ClassNotFoundException, SQLException {

Scanner scanner = **new** Scanner(System.***in***);

System.***out***.println("Enter product ID: ");

**int** productID = scanner.nextInt();

scanner.nextLine();

String query = "DELETE FROM product WHERE product\_id = ?";

**try**{

  connection = DbUtil.*createConnection*();

  pstmt = connection.prepareStatement(query);

pstmt.setInt(1, productID);

pstmt.executeUpdate();

System.***out***.println("Product deleted successfully.");

} **catch** (SQLException e) {

System.***out***.println("Error deleting product: " + e.getMessage());

}**finally** {

  DbUtil.*closeConnection*();

}

}

**public** **void** searchProduct() **throws** SQLException {

Scanner scanner = **new** Scanner(System.***in***);

System.***out***.print("Enter product Id: ");

**int** productId = scanner.nextInt();

String query = "SELECT \* FROM product WHERE product\_id = ?";

**try**{

  connection = DbUtil.*createConnection*();

  pstmt = connection.prepareStatement(query);

pstmt.setInt(1, productId);

**try** {

  ResultSet resultSet = pstmt.executeQuery();

**while** (resultSet.next()) {

System.***out***.println("Product ID: " + resultSet.getInt("product\_id"));

System.***out***.println("Product Name: " + resultSet.getString("product\_name"));

System.***out***.println("Product Price: " + resultSet.getFloat("product\_price"));

System.***out***.println();

}

} **catch** (SQLException e) {

System.***out***.println("Error searching product: " + e.getMessage());

}

}**catch**(Exception e) {

  e.getStackTrace();

}**finally** {

  DbUtil.*closeConnection*();

}

}

}

//Main

**package** com.mphasis.productmanagement;

**import** java.sql.SQLException;

**import** java.util.Scanner;

**import** com.mphasis.dao.\*;

**public** **class** ProductManagementApp {

**public** **static** **void** main(String[] args) **throws** ClassNotFoundException, SQLException {

Scanner scanner = **new** Scanner(System.***in***);

ProductManagementDAO productDAO = **new** ProductManagementDAO();

**while** (**true**) {

System.***out***.println("Product Management App");

System.***out***.println("A. View Products");

System.***out***.println("B. Add Product");

System.***out***.println("C. Update Product");

System.***out***.println("D. Delete Product");

System.***out***.println("E. Search Product");

System.***out***.println("F. Exit");

System.***out***.println("\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*");

System.***out***.println("Choose an option: ");

String option = scanner.nextLine();

System.***out***.println("\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*");

**switch** (option) {

**case** "A":

  productDAO.viewProducts();

  System.***out***.println("\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*");

**break**;

**case** "B":

  productDAO.addProduct();

  System.***out***.println("\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*");

**break**;

**case** "C":

  productDAO.updateProduct();

  System.***out***.println("\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*");

**break**;

**case** "D":

  productDAO.deleteProduct();

  System.***out***.println("\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*");

**break**;

**case** "E":

  productDAO.searchProduct();

**break**;

**case** "F":

System.***err***.println("----------------Thank You----------------");

**return**;

**default**:

System.***out***.println("Invalid option. Please choose again.");

}

}

}

}