Java Coding Challenge: Order Management System

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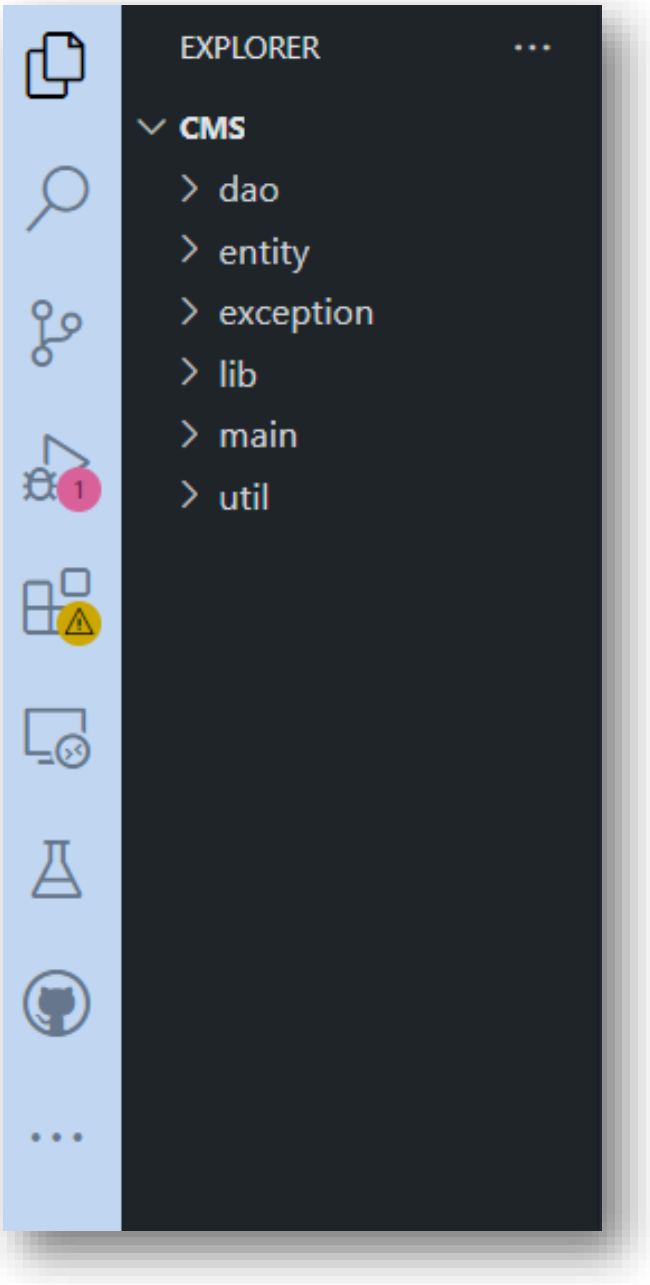
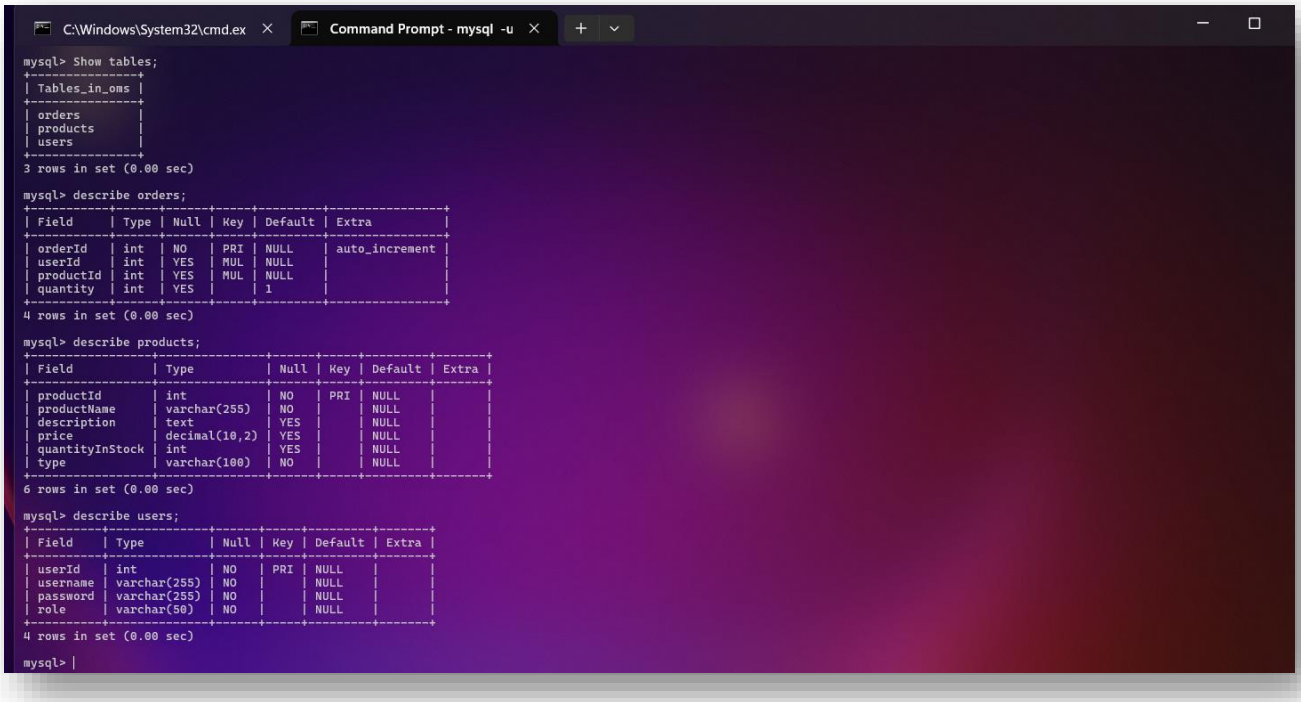
Directory structure:



Created database named OMS and created tables:



```
mysql> Show tables;
+---------------+
| Tables_in_oms |
+---------------+
| orders        |
| products      |
| users         |
+---------------+
3 rows in set (0.00 sec)

mysql> describe orders;
+-----------+------+------+-----+---------+----------------+
| Field     | Type | Null | Key | Default | Extra          |
+-----------+------+------+-----+---------+----------------+
| orderId   | int  | NO   | PRI | NULL    | auto_increment |
| userId    | int  | YES  | MUL | NULL    |                |
| productId | int  | YES  | MUL | NULL    |                |
| quantity  | int  | YES  |     | 1       |                |
+-----------+------+------+-----+---------+----------------+
4 rows in set (0.00 sec)

mysql> describe products;
+-----------------+---------------+------+-----+---------+-------+
| Field           | Type          | Null | Key | Default | Extra |
+-----------------+---------------+------+-----+---------+-------+
| productId       | int           | NO   | PRI | NULL    |       |
| productName     | varchar(255)  | NO   |     | NULL    |       |
| description     | text          | YES  |     | NULL    |       |
| price           | decimal(10,2) | YES  |     | NULL    |       |
| quantityInStock | int           | YES  |     | NULL    |       |
| type            | varchar(100)  | NO   |     | NULL    |       |
+-----------------+---------------+------+-----+---------+-------+
6 rows in set (0.00 sec)

mysql> describe users;
+----------+--------------+------+-----+---------+-------+
| Field    | Type         | Null | Key | Default | Extra |
+----------+--------------+------+-----+---------+-------+
| userId   | int          | NO   | PRI | NULL    |       |
| username | varchar(255) | NO   |     | NULL    |       |
| password | varchar(255) | NO   |     | NULL    |       |
| role     | varchar(50)  | NO   |     | NULL    |       |
+----------+--------------+------+-----+---------+-------+
4 rows in set (0.00 sec)

mysql>
```

entity/Product class:

```
package entity;


public class Product {

    private int productId;

    private String productName;

    private String description;

    private double price;

    private int quantityInStock;

    private String type;


    public Product(int productId, String productName, String description, double price, int quantityInStock,
String type) {

        this.productId = productId;

        this.productName = productName;

        this.description = description;

        this.price = price;
```

```
        this.quantityInStock = quantityInStock;
        this.type = type;
    }

    public int getProductId() { return productId; }
    public void setProductId(int productId) { this.productId = productId; }

    public String getProductName() { return productName; }
    public void setProductName(String productName) { this.productName = productName; }

    public String getDescription() { return description; }
    public void setDescription(String description) { this.description = description; }

    public double getPrice() { return price; }
    public void setPrice(double price) { this.price = price; }

    public int getQuantityInStock() { return quantityInStock; }
    public void setQuantityInStock(int quantityInStock) { this.quantityInStock = quantityInStock; }

    public String getType() { return type; }
    public void setType(String type) { this.type = type; }
}
```

entity/Electronics class:

```
package entity;

public class Electronics extends Product {
    private String brand;
    private int warrantyPeriod;

    public Electronics(int productId, String productName, String description, double price, int quantityInStock,
String brand, int warrantyPeriod) {
        super(productId, productName, description, price, quantityInStock, "Electronics");
```

```
        this.brand = brand;
        this.warrantyPeriod = warrantyPeriod;
    }

    public String getBrand() { return brand; }
    public void setBrand(String brand) { this.brand = brand; }

    public int getWarrantyPeriod() { return warrantyPeriod; }
    public void setWarrantyPeriod(int warrantyPeriod) { this.warrantyPeriod = warrantyPeriod; }
}
```

entity/Clothing class:

```
package entity;

public class Clothing extends Product {
    private String size;
    private String color;

    public Clothing(int productId, String productName, String description, double price, int quantityInStock,
String size, String color) {
        super(productId, productName, description, price, quantityInStock, "Clothing");
        this.size = size;
        this.color = color;
    }

    public String getSize() { return size; }
    public void setSize(String size) { this.size = size; }

    public String getColor() { return color; }
    public void setColor(String color) { this.color = color; }
}
```

entity/User class:

```
package entity;

public class User {
    private int userId;
    private String username;
    private String password;
    private String role;

    public User(int userId, String username, String password, String role) {
        this.userId = userId;
        this.username = username;
        this.password = password;
        this.role = role;
    }

    public int getUserId() { return userId; }
    public void setUserId(int userId) { this.userId = userId; }

    public String getUsername() { return username; }
    public void setUsername(String username) { this.username = username; }

    public String getPassword() { return password; }
    public void setPassword(String password) { this.password = password; }

    public String getRole() { return role; }
    public void setRole(String role) { this.role = role; }
}
```

dao/IOrderManagementRepository:

```
package dao;

import entity.Product;
import entity.User;
import exception.UserNotFoundException;
import exception.OrderNotFoundException;

import java.util.List;

public interface IOrderManagementRepository {
    void createOrder(User user, List<Product> products) throws UserNotFoundException;
    void cancelOrder(int userId, int orderId) throws UserNotFoundException, OrderNotFoundException;
    void createProduct(User user, Product product) throws UserNotFoundException;
    void createUser(User user);
    List<Product> getAllProducts();
    List<Product> getOrderByUser(User user);
}
```

dao/impl/OrderProcessor:

```
package dao.impl;
import dao.IOrderManagementRepository;
import entity.Product;
import entity.User;
import exception.UserNotFoundException;
import exception.OrderNotFoundException;
import util.DBUtil;

import java.sql.*;
import java.util.ArrayList;
import java.util.List;
```

```
public class OrderProcessor implements IOrderManagementRepository {
    @Override
    public void createOrder(User user, List<Product> products) throws UserNotFoundException {
        if (user == null) {
            throw new UserNotFoundException("User not found");
        }

        try (Connection connection = DBUtil.getDBConn()) {
            for (Product product : products) {
                String query = "INSERT INTO orders (userId, productId, quantity) VALUES (?, ?, ?)";
                try (PreparedStatement statement = connection.prepareStatement(query)) {
                    statement.setInt(1, user.getUserId());
                    statement.setInt(2, product.getProductId());
                    statement.setInt(3, 1);
                    statement.executeUpdate();
                }
            }
            System.out.println("Order created successfully!");
        } catch (SQLException e) {
            e.printStackTrace();
        }
    }

    @Override
    public void cancelOrder(int userId, int orderId) throws UserNotFoundException, OrderNotFoundException {
        try (Connection connection = DBUtil.getDBConn()) {
            String checkUserQuery = "SELECT * FROM users WHERE userId = ?";
            try (PreparedStatement userStatement = connection.prepareStatement(checkUserQuery)) {
                userStatement.setInt(1, userId);
                ResultSet rs = userStatement.executeQuery();
                if (!rs.next()) {
                    throw new UserNotFoundException("User not found");
                }
```

```
        }

        String checkOrderQuery = "SELECT * FROM orders WHERE orderId = ?";
        try (PreparedStatement orderStatement = connection.prepareStatement(checkOrderQuery)) {
            orderStatement.setInt(1, orderId);
            ResultSet rs = orderStatement.executeQuery();
            if (!rs.next()) {
                throw new OrderNotFoundException("Order not found");
            }
        }

        String cancelOrderQuery = "DELETE FROM orders WHERE orderId = ?";
        try (PreparedStatement cancelStatement = connection.prepareStatement(cancelOrderQuery)) {
            cancelStatement.setInt(1, orderId);
            cancelStatement.executeUpdate();
        }

        System.out.println("Order canceled successfully!");
    } catch (SQLException e) {
        e.printStackTrace();
    }
}

@Override
public void createProduct(User user, Product product) throws UserNotFoundException {
    if (user == null || !user.getRole().equals("Admin")) {
        throw new UserNotFoundException("Admin user is required to add products");
    }

    try (Connection connection = DBUtil.getDBConn()) {
        String query = "INSERT INTO products (productId, productName, description, price, quantityInStock,
type) VALUES (?, ?, ?, ?, ?, ?)";
        try (PreparedStatement statement = connection.prepareStatement(query)) {
```

```
            statement.setInt(1, product.getProductId());
            statement.setString(2, product.getProductName());
            statement.setString(3, product.getDescription());
            statement.setDouble(4, product.getPrice());
            statement.setInt(5, product.getQuantityInStock());
            statement.setString(6, product.getType());
            statement.executeUpdate();
        }
        System.out.println("Product created successfully!");
    } catch (SQLException e) {
        e.printStackTrace();
    }
}

@Override
public void createUser(User user) {
    try (Connection connection = DBUtil.getDBConn()) {
        String query = "INSERT INTO users (userId, username, password, role) VALUES (?, ?, ?, ?)";
        try (PreparedStatement statement = connection.prepareStatement(query)) {
            statement.setInt(1, user.getUserId());
            statement.setString(2, user.getUsername());
            statement.setString(3, user.getPassword());
            statement.setString(4, user.getRole());
            statement.executeUpdate();
        }
        System.out.println("User created successfully!");
    } catch (SQLException e) {
        e.printStackTrace();
    }
}

@Override
public List<Product> getAllProducts() {
```

```
    List<Product> products = new ArrayList<>();
    try (Connection connection = DBUtil.getDBConn()) {
        String query = "SELECT * FROM products";
        try (PreparedStatement statement = connection.prepareStatement(query)) {
            ResultSet rs = statement.executeQuery();
            while (rs.next()) {
                Product product = new Product(
                        rs.getInt("productId"),
                        rs.getString("productName"),
                        rs.getString("description"),
                        rs.getDouble("price"),
                        rs.getInt("quantityInStock"),
                        rs.getString("type")
                );
                products.add(product);
            }
        }
    } catch (SQLException e) {
        e.printStackTrace();
    }
    return products;
}

@Override
public List<Product> getOrderByUser(User user) {
    List<Product> products = new ArrayList<>();
    try (Connection connection = DBUtil.getDBConn()) {
        String query = "SELECT p.productId, p.productName, p.description, p.price, p.quantityInStock, p.type
FROM orders o JOIN products p ON o.productId = p.productId WHERE o.userId = ?";
        try (PreparedStatement statement = connection.prepareStatement(query)) {
            statement.setInt(1, user.getUserId());
            ResultSet rs = statement.executeQuery();
            while (rs.next()) {
```

```
                Product product = new Product(
                        rs.getInt("productId"),
                        rs.getString("productName"),
                        rs.getString("description"),
                        rs.getDouble("price"),
                        rs.getInt("quantityInStock"),
                        rs.getString("type")
                );
                products.add(product);
            }
        }
    } catch (SQLException e) {
        e.printStackTrace();
    }
    return products;
  }
}
```

DBUtil:

```
package util;

import java.sql.Connection;
import java.sql.DriverManager;
import java.sql.SQLException;

public class DBUtil {
  public static Connection getDBConn() throws SQLException {
    String url = "jdbc:mysql://localhost:3306/OMS";
    String username = "root";
    String password = "Sushmith@13";

    return DriverManager.getConnection(url, username, password);
  }
```

```
}
```

main/OrderManagement main class:

```
package main;

import dao.impl.OrderProcessor;
import entity.Product;
import entity.User;
import exception.UserNotFoundException;
import exception.OrderNotFoundException;

import java.util.List;
import java.util.Scanner;

public class OrderManagement {
    static OrderProcessor orderProcessor = new OrderProcessor();

    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        boolean exit = false;

        while (!exit) {
            System.out.println("Order Management System");
            System.out.println("1. Create User");
            System.out.println("2. Create Product");
            System.out.println("3. Place Order");
            System.out.println("4. Cancel Order");
            System.out.println("5. Get All Products");
            System.out.println("6. Get Order By User");
            System.out.println("7. Exit");
            System.out.print("Enter your choice: ");

            int choice = scanner.nextInt();
```

```
scanner.nextLine(); // Consume newline

try {
    switch (choice) {
        case 1:
            createUser(scanner);
            break;
        case 2:
            createProduct(scanner);
            break;
        case 3:
            placeOrder(scanner);
            break;
        case 4:
            cancelOrder(scanner);
            break;
        case 5:
            getAllProducts();
            break;
        case 6:
            getOrderbyUser(scanner);


            break;
        case 7:
            System.out.println("Exiting the system...");
            exit = true;
            break;
        default:
            System.out.println("Invalid choice, please try again.");
    }
} catch (UserNotFoundException | OrderNotFoundException e) {
    System.out.println("Error: " + e.getMessage());
}
```

```
    }
    scanner.close();
}

private static void createUser(Scanner scanner) throws UserNotFoundException {
    System.out.print("Enter user ID: ");
    int userId = scanner.nextInt();
    scanner.nextLine();
    System.out.print("Enter username: ");
    String username = scanner.nextLine();
    System.out.print("Enter password: ");
    String password = scanner.nextLine();
    System.out.print("Enter role (User/Admin): ");
    String role = scanner.nextLine();

    User user = new User(userId, username, password, role);
    orderProcessor.createUser(user);
    System.out.println("User created successfully!");
}

private static void createProduct(Scanner scanner) throws UserNotFoundException {
    System.out.print("Enter admin ID: ");
    int adminId = scanner.nextInt();
    scanner.nextLine();
    System.out.print("Enter product name: ");
    String productName = scanner.nextLine();
    System.out.print("Enter product description: ");
    String productDescription = scanner.nextLine();
    System.out.print("Enter product price: ");
    double price = scanner.nextDouble();
    System.out.print("Enter product stock quantity: ");
    int stockQuantity = scanner.nextInt();
    scanner.nextLine();
```

```
    System.out.print("Enter product category: ");
    String category = scanner.nextLine();

    User admin = new User(adminId, "Admin", "admin123", "Admin");
    Product product = new Product(0, productName, productDescription, price, stockQuantity, category);
    orderProcessor.createProduct(admin, product);
    System.out.println("Product created successfully!");
}

private static void cancelOrder(Scanner scanner) throws OrderNotFoundException, UserNotFoundException {
    System.out.print("Enter user ID: ");
    int userId = scanner.nextInt();
    System.out.print("Enter order ID: ");
    int orderId = scanner.nextInt();

    orderProcessor.cancelOrder(userId, orderId);
    System.out.println("Order cancelled successfully!");
}

private static void getAllProducts() {
    List<Product> products = orderProcessor.getAllProducts();
    System.out.println("All Products:");
    for (Product product : products) {
        System.out.println(product.getProductName());
    }
}

private static void getOrderbyUser(Scanner scanner) {
    System.out.print("Enter user ID: ");
    int userId = scanner.nextInt();
    User user = new User(userId, "User", "password", "User");
    List<Product> products = orderProcessor.getOrderByUser(user);
    System.out.println("Orders by " + user.getUsername() + ":");
```

```
        for (Product product : products) {
            System.out.println(product.getProductName());
        }
    }

    private static void placeOrder(Scanner scanner) throws UserNotFoundException {
        System.out.print("Enter your user ID: ");
        int userId = scanner.nextInt();
        scanner.nextLine();
        User user = new User(userId, "User", "password", "User");
        List<Product> products = orderProcessor.getAllProducts();
        System.out.println("Available Products:");
        for (int i = 0; i < products.size(); i++) {
            System.out.println((i + 1) + ". " + products.get(i).getProductName());
        }

        System.out.print("Enter product number to add to order: ");
        int productChoice = scanner.nextInt();
        Product selectedProduct = products.get(productChoice - 1);
        List<Product> orderProducts = List.of(selectedProduct);
        orderProcessor.createOrder(user, orderProducts);

        System.out.println("Order placed successfully!");
    }
}
```

exception/OrderNotFound:

```
package exception;

public class OrderNotFoundException extends Exception {
    public OrderNotFoundException(String message) {
```

```
        super(message);
    }
}
```

exception/UserNotFound:

```
package exception;

public class UserNotFoundException extends Exception {
    public UserNotFoundException(String message) {
        super(message);
    }
}
```

Outputs:

Entering the choice:

```
PS C:\Users\Sushmith\OneDrive\Desktop\CMS> & 'C:\Program Files\Java\jdk-11\bin\java.exe' '@C:\Users\Sushmith\AppData\Local\Temp\cp_4x9om2rgv72368lzjr1aacu42'
.argfile' 'main.OrderManagement'
Order Management System
1. Create User
2. Create Product
3. Place Order
4. Cancel Order
5. Get All Products
6. Get Order By User
7. Exit
Enter your choice:
```

Choice 1: Creating user. User/Admin.

```
Order Management System
1. Create User
2. Create Product
3. Place Order
4. Cancel Order
5. Get All Products
6. Get Order By User
7. Exit
Enter your choice: 1
Enter user ID: 5
Enter username: Virat Kholi
Enter password: viratt
Enter role (User/Admin): User
User created successfully!
```

Before:

```
mysql> select* from users;
+--------+----------+----------+-------+
| userId | username | password | role  |
+--------+----------+----------+-------+
|      1 | John     | password | User  |
|      2 | Sush     | Sush@13  | Admin |
|      4 | Sushhh   | Sushhh@13 | User  |
+--------+----------+----------+-------+
3 rows in set (0.00 sec)

mysql>
```

After:

```
mysql> select* from users;
+--------+--------------+----------+-------+
| userId | username     | password | role  |
+--------+--------------+----------+-------+
|      1 | John         | password | User  |
|      2 | Sush         | Sush@13  | Admin |
|      4 | Sushhh       | Sushhh@13 | User  |
|      5 | Virat Kholi  | viratt   | User  |
+--------+--------------+----------+-------+
4 rows in set (0.00 sec)
```

Choice 2: Create Product.

```
Order Management System
1. Create User
2. Create Product
3. Place Order
4. Cancel Order
5. Get All Products
6. Get Order By User
7. Exit
Enter your choice: 2
Enter admin ID: 4
Enter product name: Laptop
Enter product description: Laptops are good
Enter product price: 120000
Enter product stock quantity: 1
Enter product category: Electronics
Product created successfully!
```

```
mysql> select* from products;
+-----------+-------------+----------------+----------+-----------------+-------------+
| productId | productName | description    | price    | quantityInStock | type        |
+-----------+-------------+----------------+----------+-----------------+-------------+
|         1 | Laptop      | High-end laptop |  1000.00 |              50 | Electronics |
|         2 | Damn        | Worksss        | 12000.00 |               3 | Electronics |
+-----------+-------------+----------------+----------+-----------------+-------------+
2 rows in set (0.00 sec)

mysql> select* from products;
+-----------+-------------+------------------+-----------+-----------------+-------------+
| productId | productName | description      | price     | quantityInStock | type        |
+-----------+-------------+------------------+-----------+-----------------+-------------+
|         0 | Laptop      | Laptops are good | 120000.00 |               1 | Electronics |
|         1 | Laptop      | High-end laptop  |   1000.00 |              50 | Electronics |
|         2 | Damn        | Worksss          |  12000.00 |               3 | Electronics |
+-----------+-------------+------------------+-----------+-----------------+-------------+
3 rows in set (0.00 sec)
```

Choice 3: Place Order.

```
Order Management System
1. Create User
2. Create Product
3. Place Order
4. Cancel Order
5. Get All Products
6. Get Order By User
7. Exit
Enter your choice: 3
Enter your user ID: 5
Available Products:
1. Laptop
2. Laptop
3. Damn
Enter product number to add to order: 1
Order created successfully!
Order placed successfully!
```

```
mysql> select* from orders;
+---------+--------+-----------+----------+
| orderId | userId | productId | quantity |
+---------+--------+-----------+----------+
|       2 |      4 |         2 |        1 |
|       3 |      5 |         0 |        1 |
+---------+--------+-----------+----------+
2 rows in set (0.00 sec)
```

Choice 4: Cancel Order.

```
Enter your choice: 4
Enter user ID: 5
Enter order ID: 3
Order canceled successfully!
```

```
mysql> select* from orders;
+---------+--------+-----------+----------+
| orderId | userId | productId | quantity |
+---------+--------+-----------+----------+
|       2 |      4 |         2 |        1 |
|       3 |      5 |         0 |        1 |
+---------+--------+-----------+----------+
2 rows in set (0.00 sec)

mysql> select* from orders;
+---------+--------+-----------+----------+
| orderId | userId | productId | quantity |
+---------+--------+-----------+----------+
|       2 |      4 |         2 |        1 |
+---------+--------+-----------+----------+
1 row in set (0.00 sec)
```

Choice 5: Get all products.

```
Enter your choice: 5
All Products:
Laptop
Laptop
Damn
```

Choice 6: Get order by user.

```
Enter your choice: 6
Enter user ID: 4
Orders by User:
Damn
```

Choice 7: Exit.

```
Enter your choice: 7
Exiting the system...
```