Package Explorer tree:
- ecommerce
  - JRE System Library [JavaSE-23]
  - src
    - (default package)
      - Main.java
    - com.ecommerce
      - Customer.java
      - Product.java
    - com.ecommerce.orders
      - Order.java

```java
package com.ecommerce;

public class Product {
    private String productID;
    private String name;
    private double price;

    // Constructor
    public Product(String productID, String name, double price) {
        this.productID = productID;
        this.name = name;
        this.price = price;
    }

    // Getters and Setters
    public String getProductID() {
        return productID;
    }

    public void setProductID(String productID) {
        this.productID = productID;
    }

    public String getName() {
        return name;
    }

    public void setName(String name) {
        this.name = name;
    }

    public double getPrice() {
        return price;
    }

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

    @Override
    public String toString() {
        return "Product{" +
                "productID='" + productID + '\'' +
                ", name='" + name + '\'' +
                ", price=" + price +
                '}';
    }
}
```

```java
1  package com.ecommerce;
2
3  import java.util.ArrayList;
4  import java.util.List;
5
6  public class Customer {
7      private String customerID;
8      private String name;
9      private List<Product> shoppingCart;
10
11     // Constructor
12     public Customer(String customerID, String name) {
13         this.customerID = customerID;
14         this.name = name;
15         this.shoppingCart = new ArrayList<>();
16     }
17
18     // Add product to shopping cart
19     public void addProductToCart(Product product) {
20         shoppingCart.add(product);
21         System.out.println(product.getName() + " added to cart.");
22     }
23
24     // Remove product from shopping cart
25     public void removeProductFromCart(Product product) {
26         if (shoppingCart.remove(product)) {
27             System.out.println(product.getName() + " removed from cart.");
28         } else {
29             System.out.println("Product not found in cart.");
30         }
31     }
32
33     // Calculate total cost of items in the cart
34     public double calculateTotalCost() {
35         return shoppingCart.stream().mapToDouble(Product::getPrice).sum();
36     }
37
38     // Place an order
39     public com.ecommerce.orders.Order placeOrder() {
40         double totalCost = calculateTotalCost();
41         com.ecommerce.orders.Order order = new com.ecommerce.orders.Order("ORD" + System.currentTimeMillis(), this, new ArrayList<>(shoppingCart), totalCost);
42         shoppingCart.clear(); // Clear the cart after placing the order
43         return order;
44     }
45
46     // Getters and Setters
47     public String getCustomerID() {
48         return customerID;
49     }
50
51     public void setCustomerID(String customerID) {
52         this.customerID = customerID;
```

```java
package com.ecommerce.orders;

import com.ecommerce.Customer;
import com.ecommerce.Product;

import java.util.List;

public class Order {
    private String orderID;
    private Customer customer;
    private List<Product> products;
    private double orderTotal;

    // Constructor
    public Order(String orderID, Customer customer, List<Product> products, double orderTotal) {
        this.orderID = orderID;
        this.customer = customer;
        this.products = products;
        this.orderTotal = orderTotal;
    }

    // Generate order summary
    public String generateOrderSummary() {
        StringBuilder summary = new StringBuilder();
        summary.append("Order ID: ").append(orderID).append("\n");
        summary.append("Customer: ").append(customer.getName()).append("\n");
        summary.append("Products:\n");
        for (Product product : products) {
            summary.append("- ").append(product.getName()).append(": $").append(product.getPrice()).append("\n");
        }
        summary.append("Total: $").append(orderTotal).append("\n");
        return summary.toString();
    }

    // Getters and Setters
    public String getOrderID() {
        return orderID;
    }

    public void setOrderID(String orderID) {
        this.orderID = orderID;
    }

    public Customer getCustomer() {
        return customer;
    }

    public void setCustomer(Customer customer) {
        this.customer = customer;
    }

    public List<Product> getProducts() {
        return products;
```

```java
import com.ecommerce.Customer;
import com.ecommerce.Product;
import com.ecommerce.orders.Order;

public class Main {
    public static void main(String[] args) {
        // Create products
        Product product1 = new Product("P001", "Laptop", 1200.00);
        Product product2 = new Product("P002", "Smartphone", 800.00);
        Product product3 = new Product("P003", "Headphones", 150.00);

        // Create a customer
        Customer customer = new Customer("C001", "John Doe");

        // Add products to the customer's shopping cart
        customer.addProductToCart(product1);
        customer.addProductToCart(product2);
        customer.addProductToCart(product3);

        // Display the customer's shopping cart
        System.out.println("\nCustomer's Shopping Cart:");
        customer.getShoppingCart().forEach(System.out::println);

        // Calculate and display the total cost
        System.out.println("\nTotal Cost: $" + customer.calculateTotalCost());

        // Place an order
        Order order = customer.placeOrder();
        System.out.println("\nOrder Placed:");
        System.out.println(order.generateOrderSummary());

        // Display the customer's shopping cart after placing the order
        System.out.println("\nCustomer's Shopping Cart After Placing Order:");
        customer.getShoppingCart().forEach(System.out::println);
    }
}
```

Problems   @ Javadoc   Declaration   Console X

<terminated> Main [Java Application] C:\Users\Yahya\.p2\pool\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win32.x86_64_23.0.2.v20250131-0604\jre\bin\javaw.exe (Feb 8, 2025, 11:23:35 a.m. – 11:23:47 a.m. elapsed: 0:00:11.205) [pid: 14248]

```
Laptop added to cart.
Smartphone added to cart.
Headphones added to cart.

Customer's Shopping Cart:
Product{productID='P001', name='Laptop', price=1200.0}
Product{productID='P002', name='Smartphone', price=800.0}
Product{productID='P003', name='Headphones', price=150.0}

Total Cost: $2150.0

Order Placed:
Order ID: ORD1739013827163
Customer: John Doe
Products:
- Laptop: $1200.0
- Smartphone: $800.0
- Headphones: $150.0
Total: $2150.0
```