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```java
import java.util.Scanner;
public class EcommerceSystem {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        System.out.println("Welcome to the E-Commerce System!\n");

        System.out.print("Please enter your ID: ");
        int customerId = scanner.nextInt();
        scanner.nextLine();

        System.out.print("Please enter your name: ");
        String customerName = scanner.nextLine();

        System.out.print("Please enter your address: ");
        String customerAddress = scanner.nextLine();


        Customer customer = new Customer(customerId, customerName, customerAddress);
        ElectronicProduct electronicProduct = new ElectronicProduct( productId: 1,  name: "Smartphone",  price: 599.9,  brand: "Samsung",  warrantyPeriod: 1);
        ClothingProduct clothingProduct = new ClothingProduct( productId: 2,  name: "T-shirt",  price: 19.99,  size: "Medium",  fabric: "Cotton");
        BookProduct bookProduct = new BookProduct( productId: 3,  name: "OOP",  price: 39.99,  author: "O'Reilly",  publisher: "X Publications");


        System.out.print("How many products would you want to add to your cart? ");
        int numProducts = scanner.nextInt();


        Cart cart = new Cart(customerId, numProducts);
        for (int i = 0; i < numProducts; i++) {
            System.out.print("Which product would you like to add? 1 - Smartphone, 2 - T-shirt, 3 - OOP :");
            int choice = scanner.nextInt();
            switch (choice) {
                case 1:
                    cart.addProduct(electronicProduct, i);
```

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```
        Cart cart = new Cart(customerId, numProducts);
        for (int i = 0; i < numProducts; i++) {
            System.out.print("Which product would you like to add? 1 - Smartphone, 2 - T-shirt, 3 - OOP :");
            int choice = scanner.nextInt();
            switch (choice) {
                case 1:
                    cart.addProduct(electronicProduct, i);
                    break;
                case 2:
                    cart.addProduct(clothingProduct, i);
                    break;
                case 3:
                    cart.addProduct(bookProduct, i);
                    break;
                default:
                    System.out.println("Invalid choice!");
                    i -= 1;
            }
        }


        System.out.println("Would you like to place the order? (1 - Yes, 2 - No)");

        int choice = scanner.nextInt();
        if (choice == 1) {
            Order order = cart.placeOrder();
            System.out.println("Order placed successfully!");
            System.out.println("Order Details:");
            order.printOrderInfo();
        } else {
            System.out.println("Order cancelled.");
        }
    }
}
```

```java
class Product {
    protected int productId;
    protected String name;
    protected double price;

    public Product(int productId, String name, double price) {
        this.productId = Math.abs(productId);
        this.name = name;
        this.price = Math.abs(price);
    }
    public int getProductId() {
        return productId;
    }

    public void setProductId(int productId) {
        this.productId = Math.abs(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 = Math.abs(price);
    }
}
```

```java
class ElectronicProduct extends Product {
    private String brand;
    private int warrantyPeriod;

    public ElectronicProduct(int productId, String name, double price, String brand, int warrantyPeriod) {
        super(productId, name, price);
        this.brand = brand;
        this.warrantyPeriod = Math.abs(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 = Math.abs(warrantyPeriod);
    }
}
```

```java
class ClothingProduct extends Product {
    private String size;
    private String fabric;

    public ClothingProduct(int productId, String name, double price, String size, String fabric) {
        super(productId, name, price);
        this.size = size;
        this.fabric = fabric;
    }
    public String getSize() {
        return size;
    }
    public void setSize(String size) {
        this.size = size;
    }
    public String getFabric() {
        return fabric;
    }
    public void setFabric(String fabric) {
        this.fabric = fabric;
    }
}
```

```java
class BookProduct extends Product {
    private String author;
    private String publisher;

    public BookProduct(int productId, String name, double price, String author, String publisher) {
        super(productId, name, price);
        this.author = author;
        this.publisher = publisher;
    }
    public String getAuthor() {
        return author;
    }
    public void setAuthor(String author) {
        this.author = author;
    }
    public String getPublisher() {
        return publisher;
    }
    public void setPublisher(String publisher) {
        this.publisher = publisher;
    }
}
```

```java
class Customer {
    private int customerId;
    private String name;
    private String address;

    public Customer(int customerId, String name, String address) {
        this.customerId = Math.abs(customerId);
        this.name = name;
        this.address = address;
    }
    public int getCustomerId() {
        return customerId;
    }
    public void setCustomerId(int customerId) {
        this.customerId = Math.abs(customerId);
    }
    public String getName() {
        return name;
    }
    public void setName(String name) {
        this.name = name;
    }
    public String getAddress() {
        return address;
    }
    public void setAddress(String address) {
        this.address = address;
    }
}
```

```java
class Cart {
    private int customerId;
    private int nProducts;
    private Product[] products;

    public Cart(int customerId, int nProducts) {
        this.customerId = Math.abs(customerId);
        this.nProducts = Math.abs(nProducts);
        this.products = new Product[nProducts];
    }

    public int getCustomerId() {
        return customerId;
    }
    public void setCustomerId(int customerId) {
        this.customerId = Math.abs(customerId);
    }
    public int getNProducts() {
        return nProducts;
    }
    public void setNProducts(int nProducts) {
        this.nProducts = Math.abs(nProducts);
    }
    public Product[] getProducts() {
        return products;
    }
    public void setProducts(Product[] products) {
        this.products = products;
    }

```

```
    }


    public void addProduct(Product product, int index) {
        if (index >= 0 && index < nProducts) {
            products[index] = product;
        }
    }


    public void removeProduct(Product product) {
        for (int i = 0; i < products.length; i++){
            if (products[i] == product){
                products[i] = null;
                this.nProducts--;
                break;
            }
        }
    }


    public double calculatePrice() {
        double totalPrice = 0;
        for (int i = 0; i < products.length; i++) {
                totalPrice += products[i].getPrice();

        }
        return totalPrice;
    }
```

```
    }


    public double calculatePrice() {
        double totalPrice = 0;
        for (int i = 0; i < products.length; i++) {
                totalPrice += products[i].getPrice();

        }
        return totalPrice;
    }


    public Order placeOrder() {
        double totalPrice = calculatePrice();
        Order order = new Order(customerId, generateOrderId(), products, totalPrice);
        return order;
    }


    private int generateOrderId() {
        return (int) (Math.random() * 10000);
    }
}
```

```java
class Order {
    private int customerId;
    private int orderId;
    private Product[] products;
    private double totalPrice;

    public Order(int customerId, int orderId, Product[] products,double totalPrice) {
        this.customerId = Math.abs(customerId);
        this.orderId = Math.abs(orderId);
        this.products = products;
        this.totalPrice = Math.abs(totalPrice);
    }

    public int getCustomerId() {
        return customerId;
    }
    public void setCustomerId(int customerId) {
        this.customerId = Math.abs(customerId);
    }
    public int getOrderId() {
        return orderId;
    }
    public void setOrderId(int orderId) {
        this.orderId = Math.abs(orderId);
    }
    public Product[] getProducts() {
        return products;
    }
    public void setProducts(Product[] products) {
        this.products = products;
    }
    public double getTotalPrice() {
```

```java
        this.products = products;
    }
    public double getTotalPrice() {
        return totalPrice;
    }
    public void setTotalPrice(double totalPrice) {
        this.totalPrice = totalPrice;
    }


    private double calculateTotalPrice() {
        double total = 0;
        for (int i = 0; i < products.length; i++) {
            total += products[i].getPrice();

        }
        return total;
    }


    public String printOrderInfo() {
        System.out.println("Order ID: " + orderId);
        System.out.println("Customer ID: " + customerId);
        System.out.println("Products:");
        for (int i = 0; i < products.length; i++) {
            Product product = products[i];
            System.out.println(product.getName() + " - $" + product.getPrice());
        }
        System.out.println("Total Price: $" + totalPrice);
        return null;
    }
}
```

```
Welcome to the E-Commerce System!

Please enter your ID: 23011571
Please enter your name: Muhannad Mustafa Muhammad Abdullatif
Please enter your address: Alexandria
How many products would you want to add to your cart? 4
Which product would you like to add? 1 - Smartphone, 2 - T-shirt, 3 - OOP :2
Which product would you like to add? 1 - Smartphone, 2 - T-shirt, 3 - OOP :3
Which product would you like to add? 1 - Smartphone, 2 - T-shirt, 3 - OOP :2
Which product would you like to add? 1 - Smartphone, 2 - T-shirt, 3 - OOP :1
Would you like to place the order? (1 - Yes, 2 - No)
1
Order placed successfully!
Order Details:
Order ID: 69
Customer ID: 23011571
Products:
T-shirt - $19.99
OOP - $39.99
T-shirt - $19.99
Smartphone - $599.9
Total Price: $679.87
```