```java
import java.util.Scanner;

class Product {
    private int productId;
    private String name;
    private float price;

    public Product(int productId, String name, float 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;
```

```java
    }

    public float getPrice() {
        return price;
    }

    public void setPrice(float price) {
        this.price = Math.abs(price);
    }
}


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

    public ElectronicProduct(int productId, String name, float 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;
    }
```

```java
    public int getWarrantyPeriod() {

        return warrantyPeriod;

    }


    public void setWarrantyPeriod(int warrantyPeriod) {

        this.warrantyPeriod = Math.abs(warrantyPeriod);

    }

}


class ClothingProduct extends Product {

    private String size;

    private String fabric;


    public ClothingProduct(int productId, String name, float 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;

    }
```

```java
    public String getFabric() {
        return fabric;
    }

    public void setFabric(String fabric) {
        this.fabric = fabric;
    }
}


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

    public BookProduct(int productId, String name, float 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() {
```

```java
        return publisher;
    }

    public void setPublisher(String publisher) {
        this.publisher = publisher;
    }
}


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;
```

```java
    }

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

    public String getAddress() {
        return address;
    }

    public void setAddress(String address) {
        this.address = address;
    }
}

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;
    }
}
```

```java
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;
    } else {
        System.out.println("Invalid index.");
    }
}
```

```java
    public void removeProduct(int index) {

        if (index >= 0 && index < nProducts) {

            products[index] = null;

        } else {

            System.out.println("Invalid index.");

        }

    }


    public float calculatePrice() {

        float totalPrice = 0;

        for (Product product : products) {

            if (product != null) {

                totalPrice += product.getPrice();

            }

        }

        return totalPrice;

    }


    public void placeOrder() {

        System.out.println("Here is your order sammary:");

    }

}


class Order {

    private int customerId;

    private int orderId;

    private Product[] products;

    public float totalPrice;
```

```java
    public Order(int customerId, int orderId, Product[] products) {

        this.customerId = Math.abs(customerId);

        this.orderId = Math.abs(orderId);

        this.products = products;

        this.totalPrice = calculateTotalPrice();

    }


    public float calculateTotalPrice() {

        float total = 0;

        for (Product product : products) {

            if (product != null) {

                total += product.getPrice();

            }

        }

        return total;

    }


    public void printOrderInfo() {

        System.out.println("Order ID: " + orderId);

        System.out.println("Customer ID: " + customerId);

        System.out.println("Products:");

        for (Product product : products) {

            if (product != null) {

                System.out.println( product.getName() + " - " + "$" +
product.getPrice());

            }

        }

        System.out.println("Total Price: $" + totalPrice);

    }
```

```java
}
public class EcommerceSystem {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);

        ElectronicProduct electronicProduct = new ElectronicProduct(1,
"smartphone", 599.99f, "Samsung", 1);
        ClothingProduct clothingProduct = new ClothingProduct(2, "T-shirt",
19.99f, "Medium", "Cotton");
        BookProduct bookProduct = new BookProduct(3, "OOP", 39.99f, "O'Reilly",
"X Publications");

        System.out.println("Welcome to the E-Commerce System!");
        System.out.println("Please enter your ID:");
        int customerId = scanner.nextInt();
        scanner.nextLine();
        System.out.println("Please enter your name:");
        String name = scanner.nextLine();
        System.out.println("Please enter your address:");
        String address = scanner.nextLine();

        Customer customer = new Customer(customerId, name, address);

        System.out.println("How many products do you want add to your card ?");
        int nProducts = scanner.nextInt();
        Cart cart = new Cart(customerId, nProducts);
        Order s = new Order(customerId, 1, cart.getProducts());

        for (int i = 0; i < nProducts; i++) {
            System.out.println("which product would you like to add ?" + (i + 1) +
":");
```

```java
        System.out.println("Enter product type (1: Smartphone, 2: T-Shirt, 3: OOP):");

        int productType = scanner.nextInt();

        scanner.nextLine();


        switch (productType) {

            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 product type.");

        }

    }

    System.out.println("Your total is "+s.calculateTotalPrice()+" Do you want to place an order? 1-Yes  2-No)");

    int response = scanner.nextInt();

    if (response==1) {

        cart.placeOrder();

        Order order = new Order(customerId, 1, cart.getProducts());

        order.printOrderInfo();

    } else if (response==2){

        System.out.println("Order not placed.");

    }
```

```
        scanner.close();

    }

}
```

How many products do you want add to your card ?
4
which product would you like to add ?1:
Enter product type (1: Smartphone, 2: T-Shirt, 3: OOP):
2
which product would you like to add ?2:
Enter product type (1: Smartphone, 2: T-Shirt, 3: OOP):
3
which product would you like to add ?3:
Enter product type (1: Smartphone, 2: T-Shirt, 3: OOP):
2
which product would you like to add ?4:
Enter product type (1: Smartphone, 2: T-Shirt, 3: OOP):
1
Your total is 679.95996 Do you want to place an order? 1-Yes 2-No)
1
Here is your order sammary:
Order ID: 1
Customer ID: 23011649
Products:
T-shirt - $19.99
OOP - $39.99
T-shirt - $19.99
smartphone - $599.99
Total Price: $679.95996

Process finished with exit code 0

```
Welcome to the E-Commerce System!
Please enter your ID:
23011649
Please enter your name:
youssef fatouh
Please enter your address:
hanovill
How many products do you want add to your card ?
4
which product would you like to add ?1:
Enter product type (1: Smartphone, 2: T-Shirt, 3: OOP):
2
which product would you like to add ?2:
Enter product type (1: Smartphone, 2: T-Shirt, 3: OOP):
3
which product would you like to add ?3:
Enter product type (1: Smartphone, 2: T-Shirt, 3: OOP):
2
which product would you like to add ?4:
Enter product type (1: Smartphone, 2: T-Shirt, 3: OOP):
1
Your total is 679.95996 Do you want to place an order? 1-Yes  2-No)
1
Here is your order sammary:
Order ID: 1
Customer ID: 23011649
Products:
```