```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;
    }

    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;
    }
    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;
    }
    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() {
        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;
```

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  }

  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.");
    }
}
```

```
    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;
    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);
    }
```

```
}
public class Main {
    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) +
":");
```

```
      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.");
    }
```

```
        return;
    }
}
```