

```
public 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.price=Math.abs(price);  
        this.name=name;  
    }  
  
    public int get_product_id(){  
        return productId;  
    }  
    public float get_product_price(){  
        return price;  
    }  
    public String get_product_name(){  
        return name;  
    }  
    public void set_product_name(String name){  
        this.name=name;  
    }  
    public void set_product_id(int productId){  
        this.productId=Math.abs(productId);  
    }  
    public void set_price(float price){  
        this.price=Math.abs(price);  
    }  
}
```

```
public 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 get_brand(){
        return brand;
    }

    public int get_warranty_period(){
        return warrantyPeriod;
    }

    public void set_brand(String brand){
        this.brand=brand;
    }

    public void set_warranty_period(int warrantyPeriod){
        this.warrantyPeriod=Math.abs(warrantyPeriod);
    }
}
```

```
public 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 get_author(){
        return author;
    }
    public void set_author(String author){
        this.author=author;
    }
    public String get_publisher(){
        return publisher;
    }
    public void set_publisher(String publisher){
        this.publisher=publisher;
    }
}
```

```
public 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.fabric=fabric;
        this.size=size;
    }
    public String get_size(){
        return size;
    }
    public void set_size(String size){
        this.size=size;
    }
    public String get_fabric(){
        return fabric;
    }
    public void set_fabric(String fabric){
        this.fabric=fabric;
    }
}
```

```
public 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 get_customerId(){  
        return customerId;  
    }  
    public String get_name(){  
        return name;  
    }  
    public String get_address(){  
        return address;  
    }  
    public void set_customerId(int customerId){  
        this.customerId=customerId;  
    }  
    public void set_name(String name){  
        this.name=name;  
    }  
    public void set_address(String address){  
        this.address=address;  
    }  
}
```

```
public class Cart {
    private int customerId;
    private int nProducts;
    private Product[] products;
    private int current_index;
    public Cart(Customer customer,int nProducts){
        this.customerId=customer.get_customerId();
        this.nProducts=Math.abs(nProducts);
        products=new Product[this.nProducts];
        current_index=0;
    }
    public int get_customerId(){
        return customerId;
    }
    public int get_nProducts(){
        return nProducts;
    }
    public Product[] get_products(){
        return products;
    }
    public void set_customerId(Customer customer){
        this.customerId=customer.get_customerId();
    }

    public void addProduct(Product product){
        if (current_index<nProducts){
            products[current_index]=product;
            current_index++;
        }
        else{
            System.out.println(x:"Cart is Full!!");
        }
    }
    public void remove_product(int index){
        products[index]=null;
    }
    public float calculate_price(){
        float price=0;
        for (Product product : products) {
            price+=product.get_product_price();
        }
        return price;
    }
    public Order placeOrder(int orderId){
        Order order=new Order(this, orderId);
        return order;
    }
}
```

```
public class Order {
    private int customerId;
    private int orderId;
    private Product[] products;
    private float totalPrice;
    private int nProducts;

    public Order(Cart cart,int orderId){
        this.customerId=cart.get_customerId();
        this.orderId=orderId;
        this.nProducts=cart.get_nProducts();
        products=cart.get_products();
        totalPrice=cart.calculate_price();
    }

    public void printOrderInfo(){
        System.out.println(x:"Here's your order's summary:");
        System.out.println("Order ID: " + orderId);
        System.out.println("Customer ID: " + customerId);
        System.out.println(x:"Products:");

        for(int i=0;i<nProducts;i++){
            System.out.println(products[i].get_product_name() + " - " + products[i].get_product_price()+"$");
        }
        System.out.println("Total Price: "+totalPrice+"$");
    }
}
```

```

import java.util.Scanner;

public class App {
    Run | Debug
    public static void main(String[] args) throws Exception {
        Scanner input = new Scanner(System.in);

        ElectronicProduct electronicProduct = new ElectronicProduct(productId:1, name:"smartphone", price:599.99f, brand:"Samsung", warrantyPeriod:1);
        ClothingProduct clothingProduct = new ClothingProduct(productId:2, name:"T-Shirt", price:19.99f, size:"Medium", fabric:"Cotton");
        BookProduct bookProduct = new BookProduct(productId:3, name:"OOP", price:39.99f, author:"O'Reilly", publisher:"X Publications");

        System.out.print(s:"Enter your name: ");
        String name = input.nextLine();
        System.out.print(s:"Enter your ID:");
        int id = input.nextInt();
        input.nextLine();
        System.out.print(s:"Enter your address:");
        String address = input.nextLine();
        Customer customer = new Customer(id, name, address);

        System.out.print(s:"How many products do you wish to add to your cart?:");
        int nProducts = input.nextInt();
        Cart cart = new Cart(customer, nProducts);
        for (int i = 0; i < cart.get_nProducts(); ) {

            System.out.print(s:"Enter 1 for smartphone, 2 for T-Shirt, or 3 for OOP: ");
            int choice = Math.abs(input.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(x:"Please Enter a Correct value");
            }
        }

        System.out.print("Your total is "+cart.calculate_price()+" , Press 1 to confirm Order or 2 to cancel:");
        int choice = input.nextInt();
        if(choice==1){
            Order order = cart.placeOrder(orderId:1);
            order.printOrderInfo();
        }
        else{
            System.out.println(x:"Order Cancelled!!");
        }
    }
}

```



Enter your name: Youssef Essam Mohammad Elroweini

Enter your ID:23011646

Enter your address:address

How many products do you wish to add to your cart?:4

Enter 1 for smartphone, 2 for T-Shirt, or 3 for OOP: 2

Enter 1 for smartphone, 2 for T-Shirt, or 3 for OOP: 3

Enter 1 for smartphone, 2 for T-Shirt, or 3 for OOP: 2

Enter 1 for smartphone, 2 for T-Shirt, or 3 for OOP: 1

Your total is 679.95996, Press 1 to confirm Order or 2 to cancel:1

Here's your order's summary:

Order ID: 1

Customer ID: 23011646

Products:

T-Shirt - 19.99\$

OOP - 39.99\$

T-Shirt - 19.99\$

smartphone - 599.99\$

Total Price: 679.95996\$