# TEST CASE

```
Welcome to our E-Commerce system!
Please enter your name: Noureldin Ashraf Ahmed
Please enter your address: Milkyway, Solar System, Earth
Please enter your ID: 23012107
Which product would you like to add? 1=Smartphone 2=T-Shirt 3=OOP 4=Exit
2
Which product would you like to add? 1=Smartphone 2=T-Shirt 3=OOP 4=Exit
3
Which product would you like to add? 1=Smartphone 2=T-Shirt 3=OOP 4=Exit
2
Which product would you like to add? 1=Smartphone 2=T-Shirt 3=OOP 4=Exit
1
Which product would you like to add? 1=Smartphone 2=T-Shirt 3=OOP 4=Exit
4
Your products' total is: $679.87. Place the order? 1 - Yes , 2 - No
1

Order summary::
Order ID: 1
Customer ID: 23012107
Products:
    T-Shirt - $19.99
    OOP - $39.99
    T-Shirt - $19.99
    Smartphone - $599.9

Total Price: 679.87
```

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

    public Product(int productId, String name, double price) {
        if (productId < 0)
            this.productId = (-1 * productId);
        else
            this.productId = productId;

        this.name = name;

        if (price < 0)
            this.price = (-1 * price);
        else
            this.price = price;
    }

    public int getProductId() { return productId; }
    public void setProductId(int productId) {
        if (productId < 0)
            this.productId = (-1 * productId);
        else
            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) {
        if (price < 0)
            this.price = (-1 * price);
        else
            this.price = price;
    }
}
```

# ELECTRONIC PRODUCT CLASS

```java
public 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;

        if (warrantyPeriod <0)
            this.warrantyPeriod = (-1 * warrantyPeriod);
        else
            this.warrantyPeriod = warrantyPeriod;
    }

    public String getBrand() { return brand; }
    public void setBrand(String brand) { this.brand = brand; }

    public int getWarrantyPeriod() { return warrantyPeriod; }
    public void setWarrantyPeriod(int warrantyPeriod) {
        if (warrantyPeriod <0)
            this.warrantyPeriod = (-1 * warrantyPeriod);
        else
            this.warrantyPeriod = warrantyPeriod;
    }
}
```

# CLOTHING PRODUCT CLASS

```java
public 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; }
}
```

# BOOK PRODUCT CLASS

```java
public 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; }
}
```

# CUSTOMER CLASS

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

    public Customer(int customerId, String name, String address) {
        if (customerId < 0)
            this.customerId = (-1 * customerId);
        else
            this.customerId = customerId;

        this.name = name;
        this.address = address;
    }

    public int getCustomerId() { return customerId; }
    public void setCustomerId(int customerId) {
        if (customerId < 0)
            this.customerId = (-1 * customerId);
        else
            this.customerId = 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; }
}
```

# CART CLASS

```java
public class Cart {
    private int customerId;
    private ArrayList<Product> products;

    public Cart(int customerId) {
        if (customerId < 0)
            this.customerId = (-1 * customerId);
        else
            this.customerId = customerId;

        products = new ArrayList<>();
    }

    public void addProduct(Product product) { products.add(product); }
    public void removeProduct(Product product) { products.remove(product); }

    public double calculatePrice(){
        double totalPrice = 0;
        for (Product product : products)
            totalPrice += product.getPrice();
        return totalPrice;
    }

    public Order placeOrder(){
        Order order = new Order(customerId, orderId: 1, products, calculatePrice());
        return order;
    }

    public int getCustomerId() {
        return customerId;
    }
    public void setCustomerId(int customerId) {
        if (customerId < 0)
            this.customerId = (-1 * customerId);
        else
            this.customerId = customerId;
    }
}
```

# ORDER CLASS

```java
public class Order {
    private int customerId;
    private int orderId;
    private ArrayList<Product> products;
    private double totalPrice;

    public Order(int customerId, int orderId, ArrayList<Product> products, double totalPrice){
        if (customerId < 0)
            this.customerId = (-1 * customerId);
        else
            this.customerId = customerId;

        if (orderId < 0)
            this.orderId = (-1 * orderId);
        else
            this.orderId = orderId;

        this.products = products;

        if (totalPrice < 0)
            this.totalPrice = (-1 * totalPrice);
        else
            this.totalPrice = totalPrice;
    }

    public void printOrderInfo(){
        System.out.println("\nOrder summary::" +
                "\nOrder ID: " + orderId +
                "\nCustomer ID: " + customerId +
                "\nProducts:");
        for (Product product : products){
            System.out.println("\t" + product.getName() + " - $" + product.getPrice());
        }
        System.out.println("\nTotal Price: " + totalPrice);
    }
}
```

```java
10  ▷  public class EcommerceSystem {
11  ▷      public static void main(String[] args) {
12             Scanner scanner = new Scanner(System.in);
13             ElectronicProduct smartphone = new ElectronicProduct( productId: 1,  name: "Smartphone",  price: 599.9,  brand: "Samsung",  warrantyPeriod: 1);
14             ClothingProduct tShirt = new ClothingProduct( productId: 2,  name: "T-Shirt",  price: 19.99,  size: "Medium",  fabric: "Cotton");
15             BookProduct OOP = new BookProduct( productId: 3,  name: "OOP",  price: 39.99,  author: "O'Reilly",  publisher: "X Publications");
16
17             System.out.println("Welcome to our E-Commerce system!");
18             System.out.print("Please enter your name: ");
19             String name = scanner.nextLine();
20             System.out.print("Please enter your address: ");
21             String address = scanner.nextLine();
22             System.out.print("Please enter your ID: ");
23             int customerId = scanner.nextInt();
24             Customer customer = new Customer(customerId, name, address);
25
26             Cart cart = new Cart(customerId);
27             int productChoice = 0;
28             boolean errorFlag = false;
29             while(productChoice != 4){
30                 if(errorFlag == true){
31                     System.out.println("ERROR: Please enter a proper choice (1 or 2 or 3 or 4)");
32                 }
33                 System.out.println("Which product would you like to add? 1=Smartphone 2=T-Shirt 3=OOP 4=Exit");
34                 productChoice = scanner.nextInt();
35                 switch (productChoice){
36                     case 1:
37                         cart.addProduct(smartphone);
38                         break;
39                     case 2:
40                         cart.addProduct(tShirt);
41                         break;
42                     case 3:
43                         cart.addProduct(OOP);
44                         break;
45                     default:
46                         errorFlag = true;
47                         break;
48
49                 }
50             }
51             System.out.println("Your products' total is: $"+cart.calculatePrice()+". Place the order? 1 - Yes , 2 - No");
52             int orderChoice = scanner.nextInt();
53             if (orderChoice == 1){
54                 Order order = cart.placeOrder();
55                 order.printOrderInfo();
56             } else if (orderChoice == 2){
57                 System.out.println("You chose not to continue with the order.");
58             }
59         }
60  }
```