

Cart class :

```
package com.example;

import java.util.ArrayList;

public class Cart {
    private int customerId, nProducts;
    private ArrayList<Product> products;

    public Cart() {
        this.customerId = 0;
        this.nProducts = 0;
        this.products = new ArrayList<Product>();
    }

    public Cart(int customerId, int nProducts, ArrayList<Product> products) {
        this.customerId = Math.abs(customerId);
        this.nProducts = Math.abs(nProducts);
        this.products = products;
    }

    public void addProduct(Product P){
        products.add(P);
    }

    public void removeProduct(Product P){
        products.remove(P);
    }

    public float calculatePrice(){
        float p = 0.0f;
        for (int i = 0; i < products.size(); i++) {
            p += products.get(i).getPrice();
        }
        return p;
    }

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

    public int getCustomerId() {
        return customerId;
    }

    public int getnProducts() {
        return nProducts;
    }

    public ArrayList<Product> getProducts() {
        return products;
    }

    public void setCustomerId(int customerId) {
        this.customerId = Math.abs(customerId);
    }

    public void setnProducts(int nProducts) {
        this.nProducts = Math.abs(nProducts);
    }

    public void setProducts(ArrayList<Product> products) {
        this.products = products;
    }
}
```

Order class :

```
package com.example;

import java.util.ArrayList;

public class Order {
    private int customerId, orderId;
    private float totalPrice;
    private ArrayList<Product> products = new ArrayList<Product>(1);

    public Order() {
        this.customerId = 0;
        this.orderId = 0;
        this.totalPrice = 0;
        this.products = null;
    }

    public Order(int customerId, int orderId, float totalPrice, ArrayList<Product> products) {
        this.customerId = Math.abs(customerId);
        this.orderId = Math.abs(orderId);
        this.totalPrice = Math.abs(totalPrice);
        this.products = products;
    }

    public void printOrderInfo(){
        System.out.println("Order ID Is: " + orderId + "\nCustomer ID Is: " + customerId
        + "\nProducts: ");
        printProducts();
    }

    private void printProducts(){
        for (int i = 0; i < products.size(); i++) {
            System.out.println(products.get(i).getName() + " - $"
            + products.get(i).getPrice());
        }
        System.out.println("Total Price: $" + totalPrice);
    }

    public int getCustomerId() {
        return customerId;
    }

    public int getOrderId() {
        return orderId;
    }

    public float getTotalPrice() {
        return totalPrice;
    }

    public ArrayList<Product> getProducts() {
        return products;
    }

    public void setCustomerId(int customerId) {
        this.customerId = customerId;
    }

    public void setOrderId(int orderId) {
        this.orderId = orderId;
    }

    public void setTotalPrice(float totalPrice) {
        this.totalPrice = totalPrice;
    }

    public void setProducts(ArrayList<Product> products) {
        this.products = products;
    }
}
```

Customer class :

```
package com.example;

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

    public Customer() {
        this.customerId = 0;
        this.name = null;
        this.address = null;
    }

    public Customer(int id, String name, String address) {
        this.customerId = id;
        this.name = name;
        this.address = address;
    }

    public int getId() {
        return customerId;
    }

    public String getName() {
        return name;
    }

    public String getAddress() {
        return address;
    }

    public void setId(int id) {
        this.customerId = Math.abs(id);
    }

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

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

Product class :

```
package com.example;

public class Product {
    private int productId;
    private String Name;
    private float price;

    public Product(){
        productId = 0;
        Name = null;
        price = 0.0f;
    }

    public Product(int id, String name, float price){
        this.productId = Math.abs(id);
        this.Name = name;
        this.price = Math.abs(price);
    }

    public int getID() {
        return productId;
    }

    public String getName() {
        return Name;
    }

    public float getPrice() {
        return price;
    }

    public void setID(int ID) {
        this.productId = Math.abs(ID);
    }

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

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

Book
Product class :

```
package com.example;

import java.util.Scanner;

public class Bookproduct extends Product {
    private String author,publisher;

    public Bookproduct() {
        super();
        this.author = null;
        this.publisher = null;
    }

    public Bookproduct(int id , String name , float price,String a
        super(id,name,price);
        this.author = author;
        this.publisher = publisher;
    }

    public String getAuthor() {
        return author;
    }

    public String getPublisher() {
        return publisher;
    }

    public void setAuthor(String author) {
        this.author = author;
    }

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

Clothing product class :

```
package com.example;
```

```
public class Clothingproduct extends Product {  
    private String size,fabric;  
  
    public Clothingproduct() {  
        super();  
        this.size = null;  
        this.fabric = null;  
    }  
  
    public Clothingproduct(int id , String name, float price,String size, String fabric) {  
        super(id,name,price);  
        this.size = size;  
        this.fabric = fabric;  
    }  
  
    public String getSize() {  
        return size;  
    }  
  
    public String getFabric() {  
        return fabric;  
    }  
  
    public void setSize(String size) {  
        this.size = size;  
    }  
  
    public void setFabric(String fabric) {  
        this.fabric = fabric;  
    }  
}
```

Electronic product class :

```
package com.example;
```

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

    public ElectronicProduct() {
        super();
        this.brand = null;
        this.warrantyPeriod = 0;
    }

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

    public String getBrand() {
        return brand;
    }

    public int getWarrantyPeriod() {
        return warrantyPeriod;
    }

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

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

Test :

```
package com.example;

import java.util.Scanner;

public class EcommerceSystem {

    public static void main(String[] args) {
        Cart cart = new Cart();
        ElectronicProduct EP = new ElectronicProduct(1, "smartphone", 599.99f, "Samsung", 1);
        Clothingproduct CP = new Clothingproduct(2, "T-shirt", 19.99f, "Medium", "Cotton");
        Bookproduct BP = new Bookproduct(3, "OOP", 39.99f, "O'Reilly", "X Publications");
        Customer customer = new Customer();

        Scanner input = new Scanner(System.in);

        System.out.println("Welcome to the E-Commerce System!");
        customer = SetCustomer(customer);
        cart = setCart(cart, customer);

        int c;
        for (int i = 0; i < cart.getnProducts(); i++) {
            System.out.println("Which product would you like to add ?"
                + " 1- " + EP.getName() + " 2- " + CP.getName() + " 3- " + BP.getName());
            while (true) {
                try {
                    c = input.nextInt();
                    break;
                } catch (Exception e) {
                    System.out.println("invaild input");
                }
            }
            switch(c){
                case 1:
                    cart.addProduct(EP);
                    break;

                case 2:
                    cart.addProduct(CP);
                    break;

                case 3:
                    cart.addProduct(BP);
                    break;

                default:
                    System.out.println("invaild input");
                    break;
            }
        }
        System.out.println("Your total is $" + cart.calculatePrice() +
            ". Would you like to place the order? 1- Yes 2- No");
        while (true) {
            try {
                c = input.nextInt();
                break;
            } catch (Exception e) {
                System.out.println("invaild input");
            }
        }
        switch(c){
            case 1:
                Order order = cart.placeOrder();
                order.printOrderInfo();
            case 2:
                System.out.println("\nThanks");
                break;
        }
    }
}
```

```

static Customer SetCustomer(Customer customer){
    while (true) {
        try {
            Scanner input = new Scanner(System.in);
            System.out.println("Please enter your ID");
            customer.setId(input.nextInt());
            System.out.println("Please enter your Name");
            customer.setName(input.next());
            System.out.println("Please enter you Address");
            customer.setAddress(input.next());
            break;
        } catch (Exception e) {
            System.out.println("invaild input");
        }
    }
    return customer;
}

static Cart setCart(Cart cart, Customer customer){
    Scanner input = new Scanner(System.in);
    cart.setCustomerId(customer.getId());
    while (true) {
        try {
            System.out.println("How many prodects you want to add to your cart?");
            cart.setnProducts(input.nextInt());
            break;
        } catch (Exception e) {
            System.out.println("invaild input");
        }
    }
    return cart;
}
}

```

```

Welcome to the E-Commerce System!
Please enter your ID
23011643
Please enter your Name
Youssef AbdelMohsen
Please enter you Address
How many prodects you want to add to your cart?
3
Which product would you like to add ? 1- smartphone 2- T-shirt 3- OOP
1
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
Your total is $659.97. Would you like to place the order? 1- Yes 2- No
1
Order ID Is: 1
Customer ID Is: 23011643
Products:
smartphone - $599.99
T-shirt - $19.99
OOP - $39.99
Total Price: $659.97

Thanks

```