1) Class Ecommerce System :

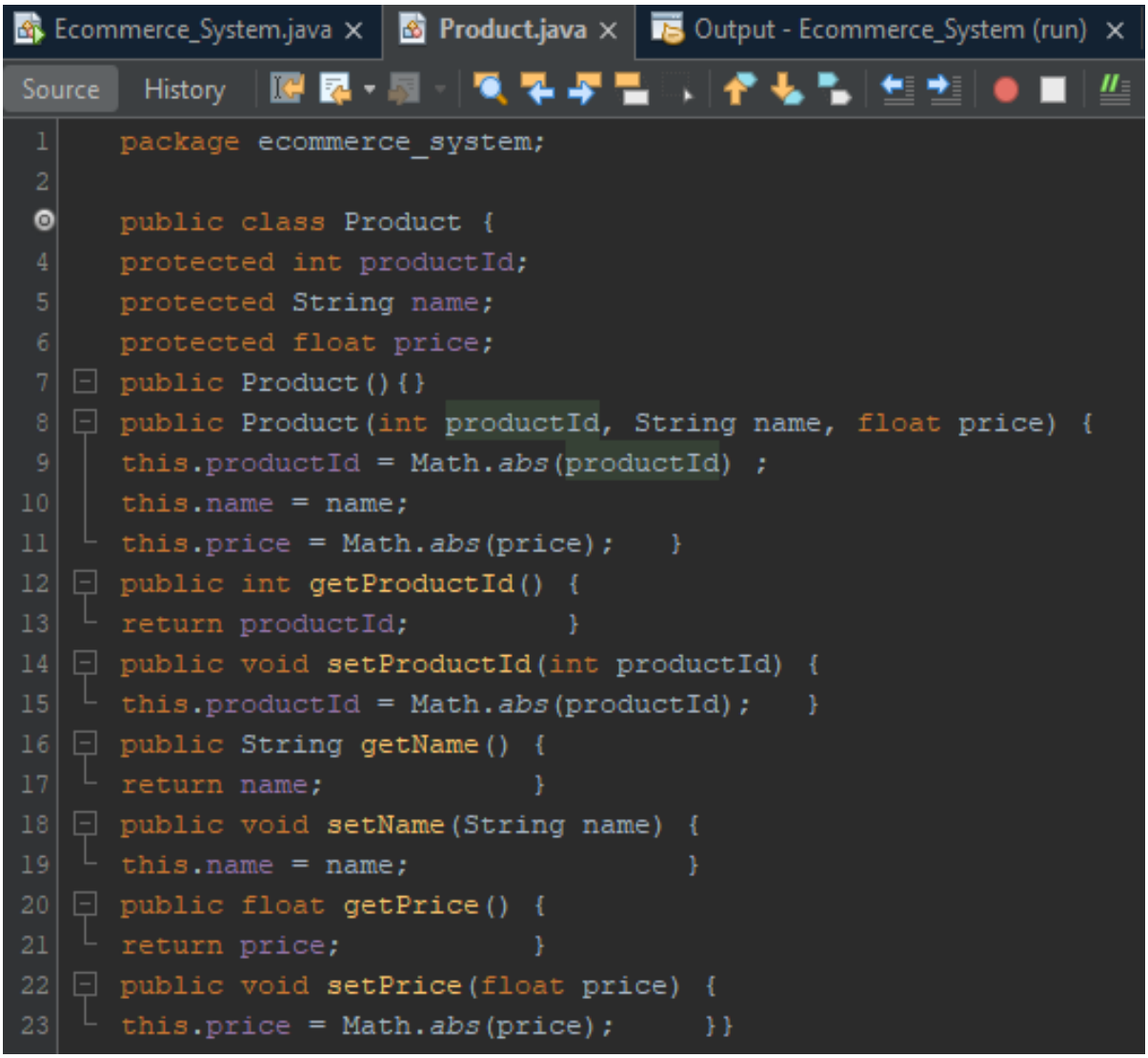
```java
package ecommerce_system;
import java.util.Scanner;
public class Ecommerce_System {
public static void main(String[] args) {
Scanner input = new Scanner (System.in);
System.out.println("Welcome to the E-commerce System ");
System.out.println("Please enter your ID : ");
int CustomerId = input.nextInt();
input.nextLine();
System.out.println("Please enter your name : ");
String name = input.nextLine();
System.out.println("Please enter your address : ");
String address = input.nextLine();
Customer customer = new Customer ( CustomerId , name , address );
System.out.println("How many products you want add to your car?");
int nProducts = input.nextInt();
input.nextLine();
Cart cart = new Cart (CustomerId , nProducts );
for (int i = 0 ; i < nProducts ;i++){
System.out.println("Which product would you like to add? 1- smartphone  2- T-shirt  3- oop");
int choice = input.nextInt();
input.nextLine();
switch (choice){
case 1:
ElectronicProduct EP = new ElectronicProduct(1, "Smartphone", 599.99f, "Samsung", 1);
cart.addProduct(EP);
break;
case 2:
ClothingProduct CP = new ClothingProduct (2, "T-shirt", 19.99f, "Medium", "Cotton");
cart.addProduct(CP);
 break;
case 3:
```

```java
case 3:
BookProduct BP = new BookProduct (3, "OOP" , 39.99f, "O'Reilly", "X Publications");
cart.addProduct(BP);

break;
default:
System.out.println("INVALID CHOICE");
  }}
float totalPrice = cart.calculatePrice();
    System.out.println("==================================");
System.out.println("Your total is $" + totalPrice);
    System.out.println("==================================");

System.out.println("Would you like to place the order? (1-yes, 2-no) ");
int orderChoice = input.nextInt();
    switch (orderChoice) {
        case 1:
            System.out.println("==================================");
            cart.placeOrder();
            break;
        case 2:
            System.out.println("THANK YOU ! THE ORDER NOT PLACED ");
            break;
        default:
            System.out.println("INVALID CHOICE");
            input.close();
            break;
    }
 }}
```

2) Class Product :




```java
package ecommerce_system;

public class Product {
protected int productId;
protected String name;
protected float price;
public Product(){}
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);      }}
```

3) Class Electronic Product :

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

4) Class Clothing Product :

```
43    class ClothingProduct extends Product {
44    private  String size ;
45    private String fabric ;
46    public ClothingProduct() { }
47    public ClothingProduct( int productId, String name, float price, String size, String fabric) {
48    super(productId, name, price);
49    this.size = size;
50    this.fabric = fabric; }
51    public String getSize() {
52     return size; }
53    public void setSize(String size) {
54    this.size = size; }
55    public String getFabric() {
56     return fabric; }
57    public void setFabric(String fabric) {
58    this.fabric = fabric; }}
```

5) Class Book Product :

```
61    class BookProduct extends Product{
62    private  String author ;
63    private String publisher ;
64    public BookProduct(){}
65    public BookProduct(int productId, String name, float price, String author, String publisher) {
66    super(productId, name, price);
67    this.author = author;
68    this.publisher = publisher; }
69    public String getAuthor() {
70    return author;}
71    public void setAuthor(String author) {
72    this.author = author; }
73    public String getPublisher() {
74    return publisher;    }
75    public void setPublisher(String publisher) {
76    this.publisher = publisher; }}
```

6) Class Customer :

```java
package ecommerce_system;

public class Customer {
private int CustomerId ;
private String name ;
private String address;
public Customer(){}
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;}
public void setName(String name) {
this.name = name; }
public String getAddress() {
return address;}
public void setAddress(String address) {
this.address = address; } }
```

7) Class Cart :

```java
package ecommerce_system;

public class Cart {
private int CustomerId ;
private int nProducts;
private Product [] Products ;

public Cart (){
this.nProducts = 0;
this.Products = new Product[10] ; }

public Cart(int CustomerId, int nProducts) {
this.CustomerId = Math.abs(CustomerId);
this.nProducts = Math.abs(nProducts);
this.Products = new Product[this.nProducts] ; }

public int getCustomerId() {
return CustomerId;}
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){
for(int i = 0 ; i < Products.length ; i++){
if(Products[i] == null){
Products[i] = product ;
 break ;     } } }

public void  removeProduct(Product product){
for(int i = 0 ; i < Products.length ; i++){
if(Products[i] == product){
Products[i] = null ;
 break ;    } } }

public float calculatePrice(){
float totalPrice = 0 ;
for (int i = 0; i < Products.length; i++) {
if (Products[i] != null) {
totalPrice += Products[i].getPrice(); } }
return totalPrice; }

public void placeOrder() {
int orderId = 1 ;
Order order = new Order(CustomerId ,orderId, Products ,calculatePrice());
order.printOrderInfo(); }

 public void printCartContents() {
System.out.println("Cart Contents => ");
for (int i = 0; i < Products.length; i++) {
if (Products[i] != null) {
System.out.println("Product Id : " + Products[i].getProductId());
System.out.println("Product Name : " + Products[i].getName());
System.out.println("Price : " + Products[i].getPrice()); }}}}
```

8) Class Order :

```java
package ecommerce_system;

public class Order {
private int customerId;
private int orderId;
private Product[] products;
private float totalPrice;
public Order (){}
public Order(int customerId, int orderId, Product[] products, float totalPrice) {
this.customerId = Math.abs(customerId) ;
this.orderId = Math.abs(orderId);
this.products = products;
this.totalPrice =Math.abs(totalPrice) ; }

public void  printOrderInfo(){
System.out.println("Here's your order summary => ");
System.out.println("Order id : " + orderId);
System.out.println("Customer id : " + customerId);
System.out.println("Products => ");
for (int i = 0; i < products.length; i++) {
if (products[i] != null) {
System.out.println(products[i].getName() + " - $" + products[i].getPrice()); } }
System.out.println("Total price: $" + totalPrice);}
}
```

9) The output :

```
run:
Welcome to the E-commerce System
Please enter your ID :
23010155
Please enter your name :
sama nasser elsaid osman
Please enter your address :
mandara
How many products you want add to your car?
4
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
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
1
==================================
Your total is $679.95996
==================================
Would you like to place the order? (1-yes, 2-no)
1
==================================
Here's your order summary =>
Order id : 1
Customer id : 23010155
Products =>
T-shirt - $19.99
OOP - $39.99
T-shirt - $19.99
Smartphone - $599.99
Total price: $679.95996
```