

SOFT7004 – OOP - Project

Completion Date: 8th December 2017

On completion please zip up your files including any documents used for drawing the class diagram etc. Upload to BlackBoard.

You are to create an inventory/shopping application as outlined below.

PART 1

You are to write the following java classes:

1.

A Product class. This will be a generic class for Products that a company may sell. It will have attributes for the following: name, description, price and productID. Use appropriate data types. Write getters and setters for all attributes. Write a method called print() that prints the Product information to the screen.

A unique productID is assigned to the product when it is created. You can use a static int to achieve this.

2.

A Phone class. It will Inherit from the Product class. It will have attributes for make (Apple, Motorola, Samsung, etc), model (iPhone 6, Moto X, Galaxy S5, etc), and storage space (in gigabytes). Write getters and setters and Overload the print() method that's inherited from the Product class. Make use of the super.print() call.

3.

A TV class. It will Inherit from the Product class. It will have attributes for make, screen size, type (LCD, LED, Plasma) and whether or not it is 3D capable. Write getters and setters and overload the print() method.

4.

Write a ProductDB class which manages an ArrayList of Products. The class provides methods to add, remove and find a product. The find method returns a product object for a matching productID.

5.

Write an OrderDetails class which has a Product and a quantity attributes. Provide a Print method.

6.

Write an Order class which manages an ArrayList of OrderDetails objects. Provide a Print method. Provide an add method which takes a product object and a quantity. The add method creates an OrderDetails object and adds it to the ArrayList.

7.

Write a Customer class that has attributes name, address. A Customer object also has an ArrayList of Order objects.

8.

Write a Test class that instantiates a number of phones and TVs and sets their attributes. Create some Customer objects. Create a ProductDB object called database. Add all your products to the object. Create some Order objects for a Customer and add the orders to that Customer object. See example code below (Note not all parameters are shown).

```
Phone p = new Phone("Apple", "iphone 6", ..); // all parameters not shown
Phone p1 = new Phone("Samsung","Galaxy s6", ...);
Phone p2 = new Phone("Apple", "iphone 5", ..);
Phone p3 = new Phone("Samsung","Galaxy s5", ...);
ProductDB database = new ProductDB();
database.add(p1);
database.add(p);
database.add(p2);
database.add(p3);
Customer Mary = new Customer("Mary" ..);
Order o = new Order();
o.add(p,12); // ordered 12 iphone 6 products
o.add(p1,1); //ordered 1 Galaxy s6
Mary.addOrder(o);
Order o1 = new Order();
o1.add(p2,1); // ordered 1 iphone 5 products
o1.add(p3,5); //ordered 5 Galaxy s5 products
Mary.addOrder(o1);
```

PART 2

You are to create a UML class diagram which details all the java classes used in your application.

PART 3

Provide a menu in your Test class which has the following options:

1. Create a new phone.
2. Search for a product by supplying the productid.
3. Display all products in the database.
4. Allow a customer to order some products by supplying the productID and quantity for each product.

You will need to use your find method on the database object to return the product object for the productID that was inputted by the user.

5. Display all the orders that a customer has made and all the OrderDetails that are in each order.
6. Quit

Example run of the menu system. User input show in bold:

Please enter a menu option

1. Create a new phone.
2. Search for a product by supplying the productid.
3. Display all products .
4. Order Products.
5. Display all orders.
6. Quit

4

Enter the customers name

Joe

Enter a product id and a quantity. Enter -1 to finish

2 3

You ordered 3 iphone 6

Enter a product id and a quantity. Enter -1 to finish

3 2

You ordered 2 galaxy s6

Enter a product id and a quantity. Enter -1 to finish

-1

Please enter a menu option

1. Create a new phone.
2. Search for a product by supplying the productid.
3. Display all products .
4. Order products.
5. Display all orders.
6. Quit

4

Enter the customers name

Joe

Enter a product id and a quantity. Enter -1 to finish

2 1

You ordered 1 iphone 6

Enter a product id and a quantity. Enter -1 to finish

3 1

You ordered 1 galaxy s6

Enter a product id and a quantity. Enter -1 to finish

-1

Please enter a menu option

1. Create a new phone.
2. Search for a product by supplying the productid.
3. Display all products.
4. Order Products.
5. Display all orders.
6. Quit

5

Enter the customers name

Joe

The Orders for Joe are as follows:

Order 1:

3 iphone 6

2 galaxy s6

Order 2:

1 iphone 6

1 galaxy s6

Please enter a menu option

1. Create a new phone.
2. Search for a product by supplying the productid.
3. Display all products.
4. Order Products.
5. Display all orders.
6. Quit

6

Goodbye