

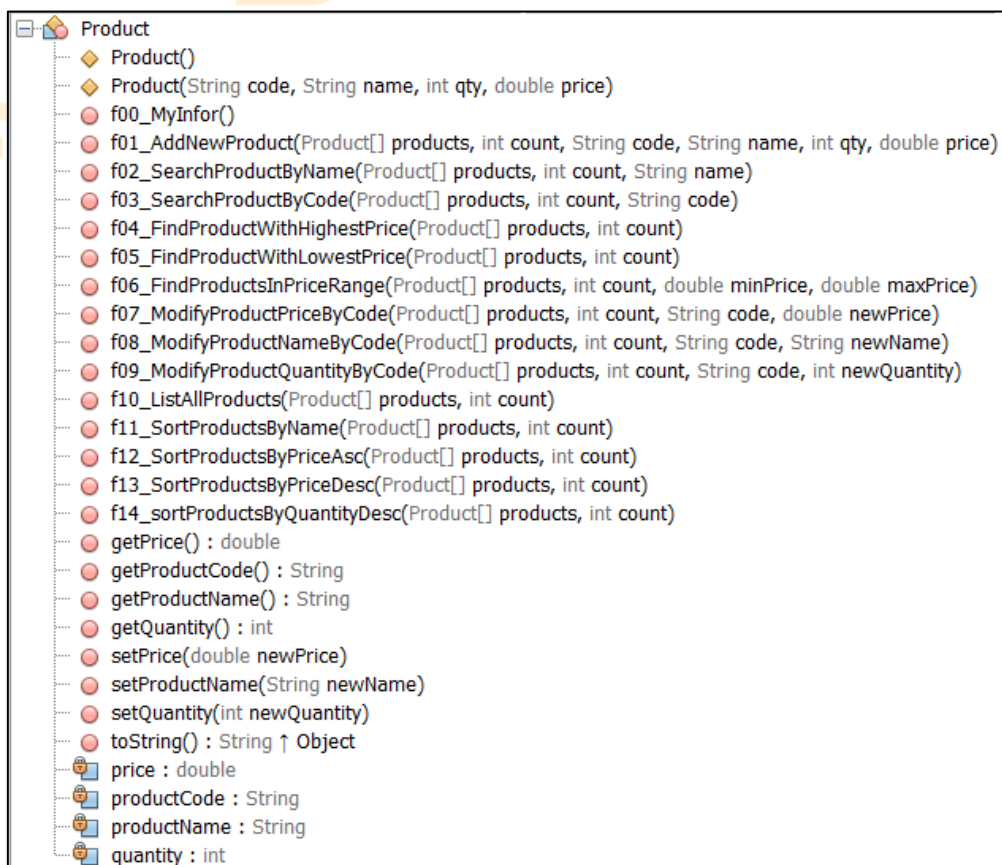
LAB 2

Using the given project and develop a programe with the below requirements:

You have **main()** method and **menu()** in **Main.class** within this project already. Create a class named **Product.java**. Making some attributes, methods, constructors and its getters and setters to solve these requirements:

- private String productCode;
- private String productName;
- private int quantity;
- private double price;

1. public void f00_MyInfor()
//To display student information: Ex: He180001 - VU VAN HUY
2. public void f01_AddNewProduct(Product[] products, int count, String code, String name, int qty, double price)
3. public void f02_SearchProductByName(Product[] products, int count, String name)
4. public void f03_SearchProductByCode(Product[] products, int count, String code)
5. public void f04_FindProductWithHighestPrice(Product[] products, int count)
6. public void f05_FindProductWithLowestPrice(Product[] products, int count)
7. public void f06_FindProductsInPriceRange(Product[] products, int count, double minPrice, double maxPrice)
8. public void f07_ModifyProductPriceByCode(Product[] products, int count, String code, double newPrice)
9. public void f08_ModifyProductNameByCode(Product[] products, int count, String code, String newName)
10. public void f09_ModifyProductQuantityByCode(Product[] products, int count, String code, int newQuantity)
11. public void f10_ListAllProducts(Product[] products, int count)
12. public void f11_SortProductsByName(Product[] products, int count)
13. public void f12_SortProductsByPriceAsc(Product[] products, int count)
14. public void f13_SortProductsByPriceDesc(Product[] products, int count)
15. public void f14_sortProductsByQuantityDesc(Product[] products, int count)



Product Management System Menu:

1. Add Product
2. Search Product by Name
3. Search Product by Code
4. Find Product with Highest Price
5. Find Product with Lowest Price
6. Find Products in Price Range
7. Modify Product Price by Code
8. Modify Product Name by Code
9. Modify Product Quantity by Code
10. List All Products
11. Sort Products by Name
12. Sort Products by Price (Ascending)
13. Sort Products by Price (Descending)
14. Sort Products by Quantity (Descending)
15. Exit

Enter your choice:

```
class Product {
    private String productCode;
    private String productName;
    private int quantity;
    private double price;

    public void f00_MyInfor() { ...3 lines }
    public Product() { ...2 lines }
    public Product(String code, String name, int qty, double price) { ...6 lines }
    public String getProductCode() { ...3 lines }
    public String getProductName() { ...3 lines }
    public int getQuantity() { ...3 lines }
    public double getPrice() { ...3 lines }
    public void setPrice(double newPrice) { ...3 lines }
    public void setProductName(String newName) { ...3 lines }
    public void setQuantity(int newQuantity) { ...3 lines }
    @Override
    public String toString() { ...4 lines }
    // Add new product
    public void f01_AddNewProduct(Product[] products, int count, String code, String name, int qty, double price) { ...5 lines }
    // Search product by name
    public void f02_SearchProductByName(Product[] products, int count, String name) { ...12 lines }
    // Search product by code
    public void f03_SearchProductByCode(Product[] products, int count, String code) { ...12 lines }
    // Find product with highest price
    public void f04_FindProductWithHighestPrice(Product[] products, int count) { ...16 lines }
    // Find product with lowest price
    public void f05_FindProductWithLowestPrice(Product[] products, int count) { ...16 lines }
    // Find products within price range
    public void f06_FindProductsInPriceRange(Product[] products, int count, double minPrice, double maxPrice) { ...14 lines }
    // Modify product price by code
    public void f07_ModifyProductPriceByCode(Product[] products, int count, String code, double newPrice) { ...13 lines }
    // Modify product name by code
    public void f08_ModifyProductNameByCode(Product[] products, int count, String code, String newName) { ...13 lines }
    // Modify product quantity by code
    public void f09_ModifyProductQuantityByCode(Product[] products, int count, String code, int newQuantity) { ...13 lines }
    // List all products
    public void f10_ListAllProducts(Product[] products, int count) { ...13 lines }
    // Sort products by name
    public void f11_SortProductsByName(Product[] products, int count) { ...11 lines }
    // Sort products by price in ascending order
    public void f12_SortProductsByPriceAsc(Product[] products, int count) { ...11 lines }
    // Sort products by price in descending order
    public void f13_SortProductsByPriceDesc(Product[] products, int count) { ...11 lines }
    // Sort products by quantity in descending order
    public void f14_sortProductsByQuantityDesc(Product[] products, int count) { ...11 lines }
}
```

```
public String toString() {
    String S1 = "\n" + productCode + "\t" + productName + "\t\t" + quantity + "\t\t" + price;
    return S1;
}
```

- **f01_AddNewProduct:** to add a new product
- **f02_SearchProductByName:** Type a name of a product to search, not case sensitive. The system will display product in detail.

```
15. Exit
Enter your choice: 1
Enter product details:
Product Code: A01
Product Name: VGACard
Quantity: 8
Price: 2000
List of all products:
Code    Name        Quantity    Price
P003    Tablet       15          299.99
P001    Laptop       10          999.99
P005    iPhone       30          49.99
P002    Printer      20          499.99
P004    Monitor      5           199.99
A01     VGACard      8           2000.0

Product added successfully.
BUILD SUCCESSFUL (total time: 23 seconds)
```

```
15. Exit
Enter your choice: 2
Enter product name to search: laptop

P001    Laptop       10          999.99
BUILD SUCCESSFUL (total time: 10 seconds)
```

```
Enter your choice: 2
Enter product name to search: abc
Product not found with name: abc
BUILD SUCCESSFUL (total time: 11 seconds)
```

- **f03_SearchProductByCode:** To search product based on the input code, not case sensitive. The output is the product information in detail

```
Enter your choice: 3
Enter product code to search: a00
Product not found with code: a00
```

```
Enter your choice: 3
Enter product code to search: p003

P003    Tablet       15          299.99
BUILD SUCCESSFUL (total time: 11 seconds)
```

- **f04_FindProductWithHighestPrice:** Display the product which has highest price.
- **f05_FindProductWithLowestPrice:** Display the product which has lowest price.

```
Enter your choice: 4
Product with highest price:

P001    Laptop       10          999.99
BUILD SUCCESSFUL (total time: 2 seconds)
```

```
Enter your choice: 5
Product with lowest price:

P005    iPhone       30          49.99
BUILD SUCCESSFUL (total time: 1 second)
```

- **f06_FindProductsInPriceRange:** Display a list of products with prices in the range the minimum to the maximum.

```
Enter your choice: 6
Enter minimum price: 15
Enter maximum price: 400
Products within price range $15.0 - $400.0:

P003    Tablet       15          299.99
P005    iPhone       30          49.99
P004    Monitor      5           199.99BUILD
```

- **f07_ModifyProductPriceByCode:** To modify the price of a product based on the product code.
- **f08_ModifyProductNameByCode:** To modify the name of a product based on the product code.

```

Enter your choice: 7
Enter product code to modify price: p002
Enter new price: 188
Price updated successfully.
List of all products:
Code   Name       Quantity   Price
P003   Tablet     15         299.99
P001   Laptop     10         999.99
P005   iPhone     30         49.99
P002   Printer    20         188.0
P004   Monitor    5          199.99
BUILD SUCCESSFUL (total time: 29 seconds)

```

```

Enter your choice: 7
Enter product code to modify price: aa
Enter new price: 345
Product not found with code: aa
List of all products:
Code   Name       Quantity   Price
P003   Tablet     15         299.99
P001   Laptop     10         999.99
P005   iPhone     30         49.99
P002   Printer    20         499.99
P004   Monitor    5          199.99
BUILD SUCCESSFUL (total time: 24 seconds)

```

```

Enter your choice: 8
Enter product code to modify name: p002
Enter new name: May In
Product name updated successfully.
List of all products:
Code   Name       Quantity   Price
P003   Tablet     15         299.99
P001   Laptop     10         999.99
P005   iPhone     30         49.99
P002   May In     20         499.99
P004   Monitor    5          199.99
BUILD SUCCESSFUL (total time: 11 seconds)

```

```

Enter your choice: 8
Enter product code to modify name: abc
Enter new name: xxx
Product not found with code: abc
List of all products:
Code   Name       Quantity   Price
P003   Tablet     15         299.99
P001   Laptop     10         999.99
P005   iPhone     30         49.99
P002   Printer    20         499.99
P004   Monitor    5          199.99
BUILD SUCCESSFUL (total time: 14 seconds)

```

- **f09_ModifyProductQuantityByCode:** Modify the quantity of a product based on the product code.

```

Enter your choice: 9
Enter product code to modify quantity: p002
Enter new quantity: 100
Product quantity updated successfully.
List of all products:
Code   Name       Quantity   Price
P003   Tablet     15         299.99
P001   Laptop     10         999.99
P005   iPhone     30         49.99
P002   Printer    100        499.99
P004   Monitor    5          199.99
BUILD SUCCESSFUL (total time: 20 seconds)

```

```

Enter your choice: 9
Enter product code to modify quantity: aaa
Enter new quantity: 888
Product not found with code: aaa
List of all products:
Code   Name       Quantity   Price
P003   Tablet     15         299.99
P001   Laptop     10         999.99
P005   iPhone     30         49.99
P002   Printer    20         499.99
P004   Monitor    5          199.99
BUILD SUCCESSFUL (total time: 17 seconds)

```

- **f10_ListAllProducts:** List all of products.

```

// List all products
public void f10_ListAllProducts(Product[] products, int count) {
    if (count == 0) {
        System.out.println("No products available.");
        return;
    }
    System.out.println("List of all products:");
    String S1 = "Code\tName\t\tQuantity\tPrice";
    System.out.print(S1);
    for (int i = 0; i < count; i++) {
        System.out.print(products[i]);
    }
    System.out.println("");
}

```

- **f11_SortProductsByName:** Sort all products by Name.
- **f12_SortProductsByPriceAsc:** Sort all products by Price in ascending order.

```
Enter your choice: 11
Products sorted by name:
List of all products:
Code   Name       Quantity   Price
P001   Laptop     10         999.99
P004   Monitor    5          199.99
P002   Printer    20         499.99
P003   Tablet     15         299.99
P005   iPhone     30         49.99
BUILD SUCCESSFUL (total time: 2 seconds)
```

```
Enter your choice: 12
Products sorted by price (ascending):
List of all products:
Code   Name       Quantity   Price
P005   iPhone     30         49.99
P004   Monitor    5          199.99
P003   Tablet     15         299.99
P002   Printer    20         499.99
P001   Laptop     10         999.99
BUILD SUCCESSFUL (total time: 2 seconds)
```

- fl3_SortProductsByPriceDesc: Sort all products by Price in descending order.
- fl4_sortProductsByQuantityDesc: Sort all products by quantity in descending order.

```
Enter your choice: 13
Products sorted by price (descending):
List of all products:
Code   Name       Quantity   Price
P001   Laptop     10         999.99
P002   Printer    20         499.99
P003   Tablet     15         299.99
P004   Monitor    5          199.99
P005   iPhone     30         49.99
BUILD SUCCESSFUL (total time: 3 seconds)
```

```
Enter your choice: 14
Products sorted by quantity (descending):
List of all products:
Code   Name       Quantity   Price
P005   iPhone     30         49.99
P002   Printer    20         499.99
P003   Tablet     15         299.99
P001   Laptop     10         999.99
P004   Monitor    5          199.99
BUILD SUCCESSFUL (total time: 1 second)
```



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