

# Rajalakshmi Engineering College

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## 2024\_28\_III\_OOPS Using Java Lab

### 2028\_REC\_OOPS using Java\_Week 7\_Q4

Attempt : 1  
Total Mark : 10  
Marks Obtained : 10

#### **Section 1 : Coding**

##### **1. Problem Statement**

Maria, a software developer, is working on an inventory management system project using Java that utilizes an inventory interface to manage a store's products.

The interface should define two methods: addProduct, which adds a product by accepting its name, price, and quantity, and calculateTotalValue, which computes the total value of all products in the inventory. Implement the interface in a class called SimpleInventory, which internally manages a list of Product objects.

Each Product object should encapsulate the product's name, price, and quantity and include a method to calculate its value as price × quantity. The system should allow users to dynamically add products to the inventory and calculate the total value of all products stored.

Help Maria achieve the task.

### ***Input Format***

The first line of input consists of an integer to choose one of the following options:

- 1 - to add a product to the inventory.
- 2 - to calculate and view the total inventory value.
- 3 - to exit the program.

For Choice 1 (Add Product):

The next input line is the string representing the product name as a string (single or multi-word, without quotes).

The next line is a double value representing the price as a decimal value

The next line is an integer value representing the quantity as an integer

For Choices 2 and 3, no additional input is required

### ***Output Format***

The output displays the results of the commands as follows:

- For the addProduct command, the program should display "Product added to inventory."
- For choice 2, the program should display "Total inventory value [totalvalue]."  
The total value should be displayed with one decimal place. If there is no product in the inventory, print the total as 0.0.
- For choice 3, the program should exit

If the choice is not 1, 2, or 3, then print "Invalid choice. Please select a valid option (1/2/3).".

Refer to the sample output for the formatting specifications.

### **Sample Test Case**

Input: 1  
Laptop  
800.0  
3  
2  
5  
3

Output: Product added to inventory.

Total inventory value: \$2400.0

Invalid choice. Please select a valid option (1/2/3).

### **Answer**

```
import java.util.Scanner;  
  
// You are using Java  
interface Inventory{  
    void addProduct(String name, double price, int quantity);  
    double calculateTotalValue();  
}  
  
class Product{  
    private String name;  
    private double price;  
    private int quantity;  
  
    public Product(String name, double price, int quantity){  
        this.name=name;  
        this.price=price;  
        this.quantity=quantity;  
    }  
  
    public double getValue(){  
        return price*quantity;  
    }  
}  
  
class SimpleInventory implements Inventory{  
    private java.util.List<Product>products;  
    private int capacity;  
  
    public SimpleInventory(int capacity){
```

```
        this.capacity=capacity;
        this.products=new java.util.ArrayList<>(capacity);
    }

    public void addProduct(String name, double price, int quantity){
        products.add(new Product(name,price,quantity));
        System.out.println("Product added to inventory.");
    }

    public double calculateTotalValue(){
        double total=0.0;
        for(Product product: products){
            total+=product.getValue();
        }
        return total;
    }

    public class Main {
        public static void main(String[] args) {
            Scanner scanner = new Scanner(System.in);
            Inventory inventory = new SimpleInventory(10);
            while (true) {
                int choice = scanner.nextInt();
                if (choice == 1) {
                    scanner.nextLine();
                    String productName = scanner.nextLine();
                    double price = scanner.nextDouble();
                    int quantity = scanner.nextInt();
                    inventory.addProduct(productName, price, quantity);
                } else if (choice == 2) {
                    double totalValue = inventory.calculateTotalValue();
                    System.out.println("Total inventory value: $" + totalValue);
                } else if (choice == 3) {
                    break;
                } else {
                    System.out.println("Invalid choice. Please select a valid option
(1/2/3).");
                }
            }
            scanner.close();
        }
    }
}
```

**Status : Correct**

**Marks : 10/10**