

# Rajalakshmi Engineering College

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Batch: 2028

Degree: B.E - AI & DS

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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  
import java.util.List;  
import java.util.ArrayList;  
interface Inventory{  
    void addProduct(String productName,double price,int quantity);  
    double calculateTotalValue();  
}  
class Product{  
    public String productName;  
    public double price;  
    public int quantity;  
    public Product(String productName,double price,int quantity){  
        this.productName=productName;  
        this.price=price;  
        this.quantity=quantity;  
    }  
    public double calculateValue(){  
        return price*quantity;  
    }  
}  
class SimpleInventory implements Inventory{  
    private List<Product> products;  
    private int capacity;  
    public SimpleInventory(int capacity){  
        this.capacity=capacity;  
        this.products=new ArrayList<>();  
    }  
}
```

```
public void addProduct(String productName,double price,int quantity){  
    Product product=new Product(productName,price,quantity);  
    products.add(product);  
    System.out.println("Product added to inventory.");  
}  
public double calculateTotalValue(){  
    double total=0.0;  
    for(Product product:products){  
        total+=product.calculateValue();  
    }  
    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